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The effect of student characteristics on the frequency of faculty-student interaction in the community college

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The effect of student characteristics on the frequency of faculty-student interaction in the community college

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

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DEDICATION

To my wife

Jennifer

and our children

Jack and Blake.

Your love and support

made this possible.

Thank you!

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ABSTRACT

The open-door policy of community colleges has presented a unique challenge to increasing graduation rates. Student entry characteristics such as family background, academic ability, as well as external forces such as family, work, and community obligations, lack of finances, and campus environments with limited opportunities to interact with others all contribute to student departure (Braxton et al., 2004). There is a need to increase retention and completion using appropriate models to improve student engagement based on studies that clearly provide insight into the faculty and student relationship. The overall purpose of this study was to examine the relationship of the variables for environmental pull factors, student effort, social and cultural capital and academics to the frequency of faculty-student interaction in the community college. Additional support for faculty-student interaction was drawn from Astin's (1985) theory of engagement.

The researcher used three secondary data sets, merged into one, from a medium size community college located in the Midwest. The survey instruments were comprised of the Community College Student Report (CCSR) from the CCSSE and the Institutional Entering Orientation Student Survey (IEOSS) from Any Community College (ACC) (pseudonym). The IEOSS was an institutionally developed survey designed to collect general information from all entering students. Results from these surveys were combined with selected data from the institution's student enrollment management database.

The findings of this study may help increase our understanding of factors that may influence faculty-student interaction. Results can be used in the development of models to assist with increasing the frequency of faculty-student interaction at community colleges. The researcher utilized a nationally developed, secondary data set already common to community

colleges and linked it with institution specific surveys and recorded student data from the study institution's enrollment management system. This approach to the use of secondary data sets offers promise for future directions of institutional research.

The findings revealed that the most influential factors impacting faculty-student interaction were related to variables for student effort and academics. Of equal importance, variables for environmental pull factors and social and cultural capital were found to not have a significant influence on the frequency of faculty-student interaction. There is a need to recognize faculty who frequently invest in efforts to engage students out of the classroom. Recommendations for changing the reward system for faculty is one approach that may promote more faculty-student interaction outside the classroom. One change that should be considered to more efficiently and effectively promote faculty-student interaction is setting policy at the institutional level regarding faculty office hours. More creative and time-saving measures need to be incorporated through the use of digital media that include social and learning management systems.

Additional research on the different types of faculty-student interaction and the level or quality of the interaction regarding meaningfulness attributed to the interaction between the participants is also needed. Similarly, research conducted on the personality types of students, faculty, and how these personality types relate to faculty-student interaction would be useful to strengthen the understanding of faculty-student interaction.

The United States must increase the number of students who complete a certificate or degree in order increase its current skilled labor market and be competitive in a global context. Unfortunately, community colleges are currently struggling to increase the number of graduates. Community colleges play a crucial role as it is the focus of their mission to

provide a skilled workforce and provide students with lower economic status an opportunity to advance to a better way of life. Both the nation and its community colleges share the mission of returning to being a global leader in education, the crux of achieving this is student success.

The faculty-student relationship is at the heart of the learning process and student engagement. It is essential that a better understanding of faculty-student interaction be established by increasing our knowledge of factors that may, or may not influence faculty-student interaction. This knowledge can, in turn, be used to promote practices that increase faculty-student interaction and ultimately lead to increased degree attainment.

CHAPTER 1. INTRODCUTION

Background of the Study

In 2010, community colleges enrolled 26% of fulltime students in the United States and 64% of the part-time students (Aud et al., 2011), yet fewer than half of those same students who entered with a goal of earning a degree or certificate meet their goal by 2016 (CCSE, 2017). Unfortunately, recent data on community college completion graduation rates have not revealed much improvement for 2-year public college students who graduated on time (11.3%) but did increase (26.7%) if that time to completion was doubled (Juszkiewicz, 2016). The questions that follow are: (a) Why are so few community college students completing, and (b) Why is it taking so long for those few who do?

The lack of completion among community college students is perplexing given what is known about the impact of a college degree. A college education increasingly is the only path to middle-class earnings. According to Carnevale and Strohl (2011), in 1970, 74% of workers with a high-school education or less were part of the middle class. Middle-class workers were earning between $30,000 and $85,000 in current dollars. By 2007, that number had dwindled to 39%. Over the same period, people with college degrees either stayed in the middle class or moved into the upper class (Carnevale & Strohl, 2011). Similarly, researchers have also found that "…educational attainment has positive net impacts on dimensions of life that, in turn, increase one's sense of life satisfaction or overall happiness" (Pascarella & Terenzini, 2005, p. 553). Recent studies have suggested that, overwhelmingly, students striving to complete college have acknowledged they were aware it was important for their future and would increase their earning potential (Johnson & Rochkind, 2009). Nevertheless, the majority did not finish (Johnson & Rochkind, 2009).

Community colleges are institutions designed to provide open enrollment or broad access to students seeking a higher education experience at low cost; most often, students who otherwise would not have the option to pursue post-secondary education are able to attend community colleges. This has been a founding principle of community colleges for well over half a century. The existing service model of community colleges has evolved to meet the needs of their communities. It is this evolution, however, that has led to the model currently being referred to as the "cafeteria or self-service model" (Baily, Jaggers & Jenkins, 2015). Consequently, students are often left to navigate incredibly complex and often ill-defined pathways, mostly by themselves.

In 2009, President Barack Obama set a goal for the United States to "…have the highest proportion of college graduates in the world." More specifically, Obama called for measures that would ensure that an additional 5 million Americans would complete "…degrees and certificates in the next decade." The need to increase the number of post-secondary graduates is driven by global economic issues. College graduates bring training and skills into America's workforce, helping its economy grow and stay competitive. The lack of post-secondary graduates in the United States has created issues in competiveness within the global economy and greater social inequality among its citizens (Carnevale & Strohl, 2013). It has been noted that, as the United States loses its global position as the lead in percentage of citizens in the workforce with postsecondary credentials, it has in turn become the global industrialized leader in income inequality (Carnevale & Rose, 2011). Increasing the number of college graduates is essential to decreasing inequality. Given the number of students who attend a community college, increasing the graduation rates is imperative to the social fabric of this nation.

Low community college success rates have most commonly been linked to students lack of academic preparation for college (Bailey, Jeong, & Cho, 2010; Jenkins, Jaggars, Roksa, Zeidenberg, & Cho, 2009). The success rates have also been attributed to the fact that community college students who are more likely to attend college part-time, are older and have other demands on their time, such as support of dependents and work responsibilities (Aud et al., 2011; Goldrick-Rab, 2010). Johnson and Rochkind, (2009) suggested that "…most students leave college because they are working to support themselves and going to school at the same time. They report that the stress of work and study just becomes too difficult" (p. 4).

Recent studies and initiatives coming out of the nation's college completion agenda are beginning to show promise for moving the needle in a positive direction for community college completion rates. There has been a shift from a focus on enrollment growth to a focus on completion. As a result, "…community colleges have become more transparent, more data driven, and more focused on student success than at any other time in their 114-year history" (Kolb et al., 2015, p. ix). Nevertheless, much insight into the changes needed to increase the number of community college graduates remains to be gained.

Examining faculty-student interaction is a viable approach to better understand and support community college students in their educational endeavors. Ultimately, it will contribute to the ability to increase the number of graduates. The faculty-student relationship is at the heart of the institutional process of learning. Faculty serve as powerful role models for the students, not just as conveyers of knowledge, but also as role models for behavior (Astin, Lindholm, & Astin, 2011).

The importance and influence faculty-student interaction has on student learning and growth has been has been of interest for several decades (Feldman & Newcomb, 1969; Lamport, 1993; Pascarella & Terenzini, 1976, 1991). This relationship has been documented regarding the importance of college culture and its significant influence on the attitudes, interests, and values of college students (Chickering, 1969; Feldman & Newcomb, 1969; Pascarella, 1985; Pascarella & Terenzini, 1979, 2005; Terenzini & Pascarella, 1994). It has also been noted that faculty-student interaction is a strong predictor for first-generation and low-income students in personal and social development, as well as cognitive and affective growth during college (Filkins & Doyle, 2002).

The majority of studies conducted have focused solely on the impact that faculty-student interactions have on the learning environment. These studies have demonstrated that instructional quality is closely linked to the quality of the faculty-student interaction (Churukian, 1982; Cooper, Stewart, & Gudykunst, 1982; Davis & Young, 1982; Feldman, 1983; Rogers, 1962). Research suggests students perceive instructors to be more effective if they are more accessible and willing to share their experiences, ideas, research, and personal time outside the classroom (Churukian, 1982; Feldman, 1983).

Research surrounding faculty-student interaction has shown potential regarding student degree attainment. Limited studies have begun to focus on this relationship's impact on persistence and retention. Research by Strauss and Volkwein (2004) concluded that faculty commitment and faculty-team collaborations facilitated student persistence. More recently, Wirt and Jaeger (2014) revealed that the quality of faculty interactions with students is among the most important elements of persistence. Furthermore, Clark's (2012) qualitative studies revealed that faculty to student relationships positively impacted

persistence in community college students of all ages. These aforementioned studies are of extreme importance as they are among the few that have focused specifically on community college students, their faculty, and the impact of the relationship between the two with regard to student retention.

As previously noted, a limited number of researchers has investigated faculty-student interactions in a community college setting (Cejda & Rhodes, 2004; Chang, 2005; Hagedorn et al., 2000; Hagedorn, Perrakis, & Maxwell, 2002; Thompson, 2001; Trautmann & Boes, 2000; Wilmer, 2009). This is surprising given the number of students enrolled and attending community colleges as well as the nuances of both their faculty and students. The current researcher sought to further the understanding of how faculty-student interaction impacts persistence and completion, and identify student characteristics that may influence these interactions. An outcome this type of research is to facilitate the development of new models that can help increase the frequency and quality of faculty-student interaction in the community college.

Statement of the Problem

The open-door policy of community colleges has presented a unique challenge to increasing graduation rates. Student entry characteristics such as family background and academic ability, as well as external forces including family, work, and community obligations, lack of finances, and campus environments with limited opportunities to interact with others all contribute to student departure (Braxton et al., 2004). For the United States to be competitive globally, it will have to ensure systems are put in place to assist community college students to graduate with a certificate or degree which provides them more opportunities for gainful employment. Research has shown that faculty-student interaction

contributes favorably to educational goal setting and goal attainment, changes in attitudes, and a more positive pursuit of scholarly careers (Pascarella & Terenzini, 2005). Nevertheless, limited studies have focused solely on the community college faculty, students and characteristics surrounding their interaction. Some recent studies have revealed outcomes demonstrating that faculty-student interaction has a favorable impact on the persistence of community college students (Clark, 2012; Wirt & Jaeger, 2014); however, fewer studies have focused on community colleges in comparison to similar research conducted on four-year universities.

Differing types of interactions may reveal different effects upon students. Researchers are beginning to form an understanding of the context in which faculty-student interaction occurs and its implications for student outcomes (Hoffman, 2014). Of particular importance to the study of faculty-student interaction is the development of models to help facilitate increased faculty-student interaction, and understanding how these models differ in a community college setting versus four-year institutions. As the nation strives to find its rightful place in a global economy where college graduates have an impact, it is crucial that researchers and educators at all levels work to increase student persistence and completion.

Today, discussion of degree attainment or "the completion agenda" has become the primary focus of community colleges. This is not surprising given that community colleges have traditionally been thought of as an innovative force in higher education as they were born out of a need to serve a population that had been ignored by other forms of higher education. It could be said that leaders at these institutions have mastered the concepts of both accessibility and affordability in the arena of higher education. It is now time to adapt and implement frameworks of learning and support services that keep an open door yet

ensure both accountability and student success in the form of exiting the door with a degree. The faculty-student relationship sits at the center of this needed transformation because it is the only required interaction that must take place in the learning process. A student taking a course must interact with the faculty member in some way: be it a lecture, a lab, a conversation or perhaps even an email or a web based video form of communication. It will require a better understanding of faculty-student interaction at it pertains to the community college setting to make an impact on student persistence and completion.

Purpose of Study

Models to improve student engagement that strengthen the faculty-student relationship must be developed and deployed to increase retention and completion. Existing studies have demonstrated that an increase in student engagement can help students overcome some of the student persistence challenges (Astin, 1993; Deli-Amen, 2011; McLenny, Martin & Askins, 2007; Pascarella & Terenzini, 1976, 1979; Terenzini & Pascarella, 1994, Tinto, 1997; Tinto & Russo, 1994; Tinto & Goodsell-Love, 1993; Whitt et al., 2008). While much of this work has focused on student "involvement" (Astin, 1993) or how "integrated" (Tinto, 1998) students are in their college environments either socially or academically (Milem & Berger 1997), additional studies have revealed that other aspects are involved in persistence. Such studies have focused primarily on four-year institutions with a few recent attempts to address two-year community colleges. The purpose of this study was to further explore student characteristics and their relationship to faculty-student interaction at community colleges.

Studies have revealed the importance of faculty and student engagement as a key relationship to promoting student success in college (Astin, 1984, 1993; Kuh et al., 2005;

Lester et al., 2013; Pascarella & Terenzini, 1976, 1979). Despite widespread acknowledgement of the need to increase completion rates at community colleges across the nation, few studies have been applied to developing methodologies to assist faculty in promoting engaging and meaningful interactions with students. Furthermore, the majority of these studies have focused on four-year universities with limited consideration given to community colleges. Community college students face a unique set of challenges when it comes to accessing faculty. In contrast to four-year university students, community college students are more likely to enroll on a part-time basis, be from families of lower income, and represent greater ethnic diversity (Provasnik & Planty 2008). They also reflect a higher percentage of students who commute (Cohen & Brawer, 2003) and are more likely to have obligations in addition to their studies, such as care of dependents (Berkner & Choy, 2008) and/or work either part-time or full-time jobs (Provasnik & Planty, 2008). These factors may make achieving success not only a greater challenge but also become impediments to interacting with faculty.

By increasing one's understanding of the factors involved that both encourage and impede faculty-student interaction in the community college setting, better practices can be developed and implemented. This type of model for the development of faculty-student interaction is of particular importance to community colleges where the challenges of limited student engagement adversely impacts student retention and completion. This study was conducted to identify variables of student behavior that are involved in influencing the frequency which faculty-student interaction occurs.

Environmental pull factors, student effort, social, and cultural capital exert influence on retention and completion for students in community colleges (Braxton et al., 2004; Chen,

2005; Hawley &Harris, 2005; King & Bannon, 2002; Matti, 200 Nora, 2003; McKinney & Novak, 2012; Nora & Wedham, 1991; Nora, Cabrera, Hagedorn & Pascerella, 1996; Sandoval-Lucero et al., 2014; Schimid and Abell, 2003; Tinto, 2004). The purpose of the present investigation was to examine the relationship of these student characteristics to the frequency of faculty-student interaction in the community college. This quantitative analysis explored the following questions:

Research Questions

The following research questions were used to frame the study:

Descriptive

1. What are the demographic characteristics of the study participants?
2. What are the frequency and types of faculty-student interaction reported by the participants?

Inferential

3. What relationship, if any, exists between the frequency of faculty-student interactions and demographic variables (gender, race, age, and marital status)?
4. What relationship, if any, exists between the frequency of faculty-student interaction and student experiences with environmental pull factors (hours worked per week, distance commuting to and from class, having child/dependent living in home, hours spent caring for dependent)?
5. What relationship, if any, exists between the frequency of faculty-student interaction and student effort (preparing two or more draft papers or assignments prior to submission, hours per week preparing for class, coming to class unprepared, skipping class, tutor and skills lab use)?

6. What relationship, if any, exists between the frequency of faculty-student interaction and social and cultural capital (first generation and non-first-generation college students, native English speakers and non-native English speakers, need of assistance completing the FAFSA, and Pell eligibility)?
7. What relationship, if any, exists between the frequency of faculty-student interaction and academic variables (GPA at time of survey, full-time or less than fulltime enrollment status, degree type, degree completion in 200% of time)?
8. To what extent can the frequency of faculty-student interaction be predicted by environmental pull factors, student effort, social and cultural capital and academic variables?

Theoretical Frameworks

This study employed the use of environmental pull factors, social and cultural capital, and student effort to explore factors relating to the frequency of faculty-student interaction. Additional support for faculty-student interaction was drawn from Astin's theory of engagement. While the use of social and cultural capital, student effort and environmental pull factors have been widely used in the higher educational research literature, limited studies have been directed at examining their relationship with faculty-student interaction.

Astin's (1985) student involvement theory suggested that students learn by becoming involved, and emphasized the optimal way to involve students in learning and in college life is to increase personal contact between faculty and students. Astin further asserted that faculty and student interactions have significant positive correlations with every academic attainment outcome, every self-reported area of intellectual and personal growth, and a variety of personality and attitudinal outcomes. A positive relationship exists between faculty

and student involvement and student development and satisfaction; as contact between students and faculty inside and outside of the classroom increases, student development and satisfaction also increase (Astin, 1993).

Pace's (1979) student development and college impress model suggested the key variable that impacts student development is the quality of engagement, not just participation. Pace explained the quality of effort is twofold: the institution must offer educational opportunities and activities, and the student must participate and actively engage in those opportunities. The more involved and satisfied a student is with the college experience, the more likely that he or she will be successful, persist, and graduate. This concept applies directly to the faculty-student interaction.

Significance of Study

According to the Completion Agenda Progress 2012 report, data from 2010 placed the United States 14th out of 36 countries in terms of the percentage of 25- to 34-year-olds with an associate degree or higher. When looking at attainment of bachelor's degrees and above for this age group, the United States ranks 11th. The need to increase the number of post-secondary graduates stems directly from global economic issues. According to the Georgetown University Center on Education and the Workforce, 60% of U.S. jobs will require some form of postsecondary education by 2018. For U.S. citizens the consequences of not obtaining some form of postsecondary education are increasingly ominous, especially in this economy. Community colleges are a critical component in returning the U.S. to its place as a global leader in higher education degree attainment. In 2010, community colleges enrolled 26% of fulltime students in the United States and 64% of the part-time students

(Aud et al., 2011). Community colleges stand at center of helping the United States achieve its goal.

There is a need to increase retention and completion using appropriate models to improve student engagement based on studies that clearly provide insight into the faculty and student relationship. These models must be developed, and their implications viewed regarding current academic practices. Similarly, models of excellence must be articulated with research findings, and shared as best practices among the community college institutions. Existing studies have demonstrated that an increase in student engagement can assist students to overcome some of the challenges posed to student persistence (Astin, 1993; Deli-Amen, 2011; McLenny, Martin & Askins, 2007; Pascarella & Terenzini, 1976, 1979; Terenzini & Pascarella, 1994, Tinto, 1997; Tinto & Goodsell-Love, 1993; Tinto & Russo, 1994; Whitt et al., 2008). While much of this work has focused on student "involvement" (Astin, 1993) or how "integrated" (Tinto, 1998) students are in their college environments either socially or academically (Milem & Berger, 1997), additional studies have shown that other aspects are involved in persistence. These aforementioned studies have focused primarily on four-year institutions; whereas only recently studies have started to emerge that focus on two-year community colleges.

Pascarella (1997) confessed that, of the approximately 2,600 studies reviewed for the text that he co-authored with Terenzini, less than 5% of the studies focused on community college students. Similarly, a review of approximately 2,300 articles published between 1990 and 2003 in five major higher education journals revealed that only 8% mentioned community colleges (Townsend, Donaldson, & Wilson, 2004). Given the differences in community colleges and four-year institutions, more in-depth research is needed to be able to

confirm or deny the application of findings from those studies focused at the university level. This is especially true regarding factors that influence faculty-student interaction as well as its impact on retention and completion.

Definition of Terms and Acronyms

The following operational definitions were used for the purpose of this study:

ANOVA: one-way analysis of variance

CCSSE: Community College Survey of Student Engagement. The Community College Survey of Student Engagement (*CCSSE*) is the umbrella organization for survey research, focus group work, and related services for community and technical colleges interested in improving educational quality through strengthened student engagement and student success. It was developed as part of the University of Texas' College of Education, and is now referred to as the Center for Community College Student Engagement (CCSSE, 2017). Due to the popularity of the survey instrument the term CCSSE has become synonymous for both the survey instrument and the organization responsible for its development. The terms were used interchangeably in this study.

***CSSR*:** Community College Student Report survey instrument that was developed by the research organization, The Community College Survey of Student Engagement (CCSSE).). Due to the popularity of the survey instrument the term CCSSE has become synonymous for both the survey instrument and the organization responsible for its development. The terms were used interchangeably in this study.

***Environmental pull factors*:** Environmental pull factors are characteristics that have been identified to have a pulling-away or negative influence on students and their pursuit of a

college degree. These factors include family responsibility such as providing care for a dependent, working off campus and commuting daily to college (Nora, 2003).

EMS: Enrollment Management System

Faculty-student interaction: The interaction students have with faculty. It can also be reversed to student-faculty interaction. Both faculty and students must take responsibility for interaction.

FAFSA: Free Application for Federal Student Aid

GPA: Grade Point Average, a measurement used by colleges to describe academic performance. It is calculated by dividing the total number of grade points a student earned by the total number of credits attempted; a student's GPA can range from 0.0 to 4.0.

IEOSS: Institutional Entering Orientation Student Survey (IEOSS) was an institutionally developed survey designed to collect general information from all entering students.

***Quality of effort*:** Pace's (1984) theory that indicates student involvement is a function of the opportunities that an institution offers and by which the students make use of those opportunities in their academic and intellectual experiences, and their personal or social experiences. The term is used interchangeably with student effort in this study.

Sequential multiple regression*:* Statistical procedure used for examining the influence of several predictor independent variables in a specific order on the dependent variable (Mertler & Vannatta, 2013).

Social and cultural capital: Cultural capital is essentially the cultural relevant knowledge, competencies, skills, or abilities valued in a particular context (Bourdieu, 1986; Bourdieu & Passeron, 1977). It comprises culture-based elements and indicators of symbolic wealth that

help to define one's social class or cultural standing (Wells, 2008). This study used the combined terminology of social and cultural capital.

Student engagement: commonly defined term and applied broadly to refer to the extent students are actively involved in significant educational experiences and activities. Research indicates that student engagement is tied to desired educational outcomes, such as increased learning, persistence in college, and graduation (Pascarella & Terenzini, 2005).

CHAPTER 2. LITERATURE REVIEW

The purpose of this study was to explore student characteristics and their relationship to faculty-student interaction at community colleges to further understand how faculty-student interaction in a community college setting impacts persistence and completion, and to identify student characteristics that may influence these interactions. The review of literature is divided into multiple sections. First, a review of the community college is provided to focus on the unique characteristics that led to both its inception and mission, and how these factors have played in the modern context of completion. Second, the focus is shifted from the institution to the student. A brief overview of the unique characteristics of community college students is provided in comparison to those in other higher education institutions. These factors are explored further along with the institutional characteristics of community colleges to reveal the emergence of the concept of the revolving door, or the cafeteria-style service model.

The third section depicts the nation's new completion agenda. A summary of the literature is provided as it pertains to the community colleges' shift to a focus on persistence, retention and student completion, rather than providing open-door access and increasing enrollment. It includes a brief discussion of three key early outcomes of the completion agenda: (a) the development of the Voluntary Framework of Accountability (VFA) resulting from the need of a set of standard metrics for community colleges to apply for tracking student success, increasing transparency, and the shifting focus to outcomes; (b) the nation's first fully comprehensive model for exploring, discovering, implementing, validating, and sharing best practices among community colleges that promote student success in the forms of persistence and completion; Achieve the Dream (ATD) (2017); and (c) The Community

College Survey of Student Engagement (CCSSE) not only as an instrument of measuring student engagement, but also as a reflection of over a decade's worth of data and what institutional leaders have learned from it.

Fourth, a brief overview is provided of the concepts and the definitions of student success, and how they relate to the completion agenda. A review of the literature is presented related to faculty-student interaction based on research conducted at four-year intuitions and community colleges. Finally, a brief overview is provided of the supporting theoretical frameworks that informed the model selected for testing and applications in this study.

Community College

Community colleges are a distinctively American invention. They emerged during the early 1900s in response to the nation's need for trained workers to operate expanding industry, a lengthened period of adolescence, and society's drive for greater social equality. Both the number of community colleges and their missions have changed over the past 100 years. Boggs (2011) noted that from their early beginnings as junior colleges, 2-year institutions have been shaped internally by visionary leaders and policy makers as well as by external forces, such as the Great Depression, World War II, the baby boomer generation, and the demands of industry for skilled workers.

Cohen and Brawer (2008) defined the community college as any institution regionally accredited to award the associate of arts or the associate of science as its highest degree (p. 5). While this definition includes two-year colleges, and technical colleges, it is limited in that it does not truly capture many of the vocational and technical attributes possessed by many community colleges of today and the past. Rifkin (1998) stated the traditional mission of the community college was to provide access to higher education and to provide higher

education for students in their first two years of studies towards their bachelor's degree. The mission of the community college has evolved to now include providing improved career opportunities and an enhanced quality of life for students and their families, and a well prepared, technologically literate workforce for business and industry (Herzog, 2006).

This comprehensive mission of the community college is also a reflection of their governance by state and local communities, thus reflecting their need to address ever-emerging educational, economic, and social needs. The community college's fundamental mission is to make higher education available to anyone who aspires to it (Vaughn 2006). This unique responsibility was bestowed upon community colleges by the President's Commission on Higher Education when it called for equality of opportunity in American education (Russell, 1949). Given the uniqueness of open-door admissions, it is not surprising that community colleges students traditionally represent a wide range of racial/ethnic groups and ages.

Since the early 1900s, the number of community colleges has grown from 20 institutions in 1901 (Phelan, 2000) to 1,069 in 1999 (McClenney, 2004) to 1,155 in 2000 to 1,202 in 2007 (AACC, 2007) and 1,108 as of 2016 (AACC, 2016). The history of the community college may be categorized as one of steady growth, both in the number of institutions as well as the number of students served. Enrollment trends of students at community colleges grew rapidly throughout the 1950s and 1970s, with record growth occurring in the first decade of the 21st century. Community college students comprised 35% of all postsecondary students in the United States in 2009, and grew to represent an all-time high estimated at 40% by 2011. In the fall of 2006, over 6.2 million students were enrolled in community colleges across the country (Provasik & Planty, 2008). By 2009, the number

had increased to 8 million students (AACC, 2012b) enrolled in 1,132 community colleges, which includes public, independent, and tribal community colleges, in the United States. The National Student Clearinghouse Research Center reported that in 2015, community colleges enrolled about 5.9 million students, while in 2014 that number was about 6 million. Community colleges have been on a steady decline since 2010, ending the increases during the economic downturn in 2008 (Smith, 2016). The enrollment drop could be attributed to a number of factors with the most often cited as the improved economy. When the economy stagnated and unemployment increased, many displaced workers returned to school to retrain for new industries that were still hiring workers. As unemployment gradually stabilized, many returned to work and were no longer in need of additional training. Regardless of the reason for the decline, community colleges still provide open-door access to more students than in the past. While community colleges have a successful history of expansion, unfortunately the same cannot be said when looking at graduation rates; open door access does not always result in a successful exit for most students.

Open-door paradox

Somewhere along the way something went wrong. Vaughn (2005) noted that it was during this period of expansion that community colleges continued to enroll students for whom no state or local funds were available, resulting in issues of overreliance on both part-time faculty and remedial courses. Additionally, researchers had demonstrated that the intended outcomes of community colleges were not being achieved (Brint & Karabel, 1994). Dougherty (1994) concluded that students who aspired to obtain a four-year degree, but entered a community college, suffered high rates of freshman and sophomore attrition, and were less likely to obtain a bachelor's degree than their counterparts who started at

four-year institutions. In essence, as community college enrollments continue to rise, their graduation numbers did not follow suit.

The AACC's (2012) report, *Reclaiming the American Dream: Community Colleges and the Nation's Future*, stated that 13 million full- and part-time students were enrolled in community colleges in 2009. Of those 13 million community college students, 42% were first-generation college students, 15% were returning to community colleges seeking education needed for a career change, and more than 50% were non-traditional students. This certainly demonstrates the open enrollment philosophy of community colleges. Nevertheless, the 2008–09 academic year only 630,000 associate's degrees and 425,000 certificates were conferred to this diverse population of students enrolled in community colleges across the nation. This represents only 46% of community college students, sustaining the claim that in 2012 less than half of students who enter a community college graduate or transfer to a four-year institution within six years.

The community college open-door policy makes it possible for full-time or part-time students to begin and end programs and courses at any time they choose, a condition that is known in the community college sector as "stopping in" and "stopping out." This is often compounded because many of the students entering two-year colleges are underprepared for college-level academics. The open enrollment community college phenomenon makes it particularly difficult to track time to completion. Historically, institutions focused more on enrollments and open-door admissions than on completion.

Morest (2013, p. 2) described the "paradox of success" that the open door-mission of the community college is likely to be in direct opposition to its overall low performance, as measured through student success. Morest further indicated that, historically, it was the

unique comprehensive mission of the community college that served as the focus of defining success; thus allowing for diversion of attention from student outcomes such as successful degree completion. Fortunately, colleges in the last decade have begun to turn their attention toward completion and there is now a call for a new design with promising results.

Students

Perhaps one of the most striking testaments to the need and purpose of having an open-door enrollment mission for community colleges is found through exploration of the diversity represented by the students. If not for the community college, where would these students go for higher education? Cohen and Brower (2003) used two words to describe community college students: "number and variety" (p. 37). Also of note in regard to the institution and its open-door mission is that the makeup of the community college student population has not changed markedly since 2004 with the exception of an increase in the number of Hispanic/Latino students (CCCSE, 2015). When discussing the diversity of community college students, Clark (2012) noted that "…the nontraditional community college student is our student (p. 511)." Clark further described nontraditional students as those that are first generation to college, adult student, employed, parent, LGBT (lesbian, gay, bisexual, transgender), veteran, historically underrepresented groups and those of lower socio-economic status. A review of the literature revealed that community college students have a set of distinguishing characteristics separating them from students attending 4-year colleges.

The mean age of students attending community colleges in the United States during the 2014-2015 academic year was 28 years. Approximately 37% of community college

students were under 21 years of age, whereas 49% of students were between 22–39 years of age and 14% were 40 years of age or older. A majority of all community college students are female (57%). The composition of ethnicity for community college students in 2014-2015 was 49% Caucasian, 22% Hispanic, 14% Black, whereas Asian/Pacific Islanders account for 6%, Native American make up 1%, and 4% are other/unknown (AACC, 2016).

Many community college students are commuters, have greater family responsibilities, and spend more time in the classroom with their college peers rather than socializing outside of school (Hagedorn, Maxwell, & Hampton, 2002). In regard to proximity to college, most community college students live within eight miles of the college they attend, far closer than students who attend public and private four-year colleges and universities. When selecting a college, factors such as proximity, transportation, affordability and flexibility play a key role for low-income students, particularly for students of color. Local community colleges are often the best options for these students (ACE, 2016). Also of relevance to this decision is the support of dependents. In 2011-2012 academic year, 29% of public community college students indicated that they were parents, of those 53% were single parents (AACC, 2015). Peterson (2016) demonstrated that child-care was a primary concern among student-parents and has implications regarding persistence.

As a result of the need to work, number of dependents, and financial situations it is not surprising to find the majority of community college students are enrolled part time. In the fall semester of 2009, 59% of community college students were enrolled part-time. Part-time enrollment is defined by the Integrated Postsecondary Education Data System as

enrollment consisting of fewer than 12 credit hours in a given semester. CCCSE (2015) reported little change in the percentage of community colleges students attending part- or full-time from 2004 to 2014. There was only a 1% increase from 2004 to 2015 for part-time students. For community college students attending part-time clearly has a impact on both time to completion and likelihood of completion. The NSC data revealed a remarkable difference in completion rates for part-time and full-time students at community colleges; for the 2013 academic year, over a six- year period, 41% of students who attended full-time completed a program while only 18.3% of those attending part-time completed (Juszkiewicz, 2016).

Reasons for part time attendance may relate to community college students' tendency to be of lower socio-economic status and in greater financial need. The socioeconomic level of most students who attend community colleges is lower than students who attend four-year institutions (Cohen & Brawer, 2003; Rhoads & Valadez, 1996). A high percentage of these students are working-class, poor, and minority (Shaw & London, 2001). This is further demonstrated in that the 2013-2014 academic year, community colleges, including public four-year, primarily associate degree granting institutions, enrolled 10.5 million credit students, representing 46% of all undergraduates. In that same year, about 3.5 million community college students received a Pell Grant, comprising 40% of all Pell Grant recipients. About 40% of students at public two-year institutions receive federal Pell grants (AACC, 2015). This also has implications for classroom performance as one's academic profile is tied closely to income; 36% of low-income students (incomes below $25,000) had a high school grade point average below

3.0, compared to 19% of students whose incomes, family or student, was in excess of $100,000 in 2007-2008 (Mullin, 2012).

Community college students are also disproportionately part-time and older students who have other demands on their time, such as substantial work or family obligations (Aud et al., 2011; Goldrick-Rab, 2010); these factors create additional challenges to completion beyond academic preparation. It has been demonstrated that working while enrolled in college negatively impacts completion, especially when students work more than 20 hours a week (Cook & King, 2007; Orozco & Cauthen, 2009). Studies have also demonstrated this has an adverse impact on faculty-student interaction. The amount of time students spend at a job negatively affects the available amount of time they have to interact with faculty outside of class, and the quality of effort exhibited in class (Thompson, 2001). Nevertheless, given the lower socioeconomic status and income as well as the addition of dependents, foregoing the income of a steady job is not an option for most community college students.

According to the National Center for Education Statistics, in 2007, nearly half (45%) of "traditional" undergraduates worked while enrolled. This includes students between the ages of 16 and 24 attending college full-time. This figure has only increased over time. Community college students are more likely to work while in school than students in other sectors (Ma & Baum, 2016). According to AACC reports based on NCES data, during the 2011-2012 academic year 22% of community college student enrolled full-time worked full-time, while 40% of them held a part-time job. As for part-time students, 41% of them were employed full-time and 32% were employed part-time (AACC, 2014). Today, it is reported that about 80% of traditional-age undergraduates attending college

part-time worked while enrolled. In the United States today, nearly 14 million people or 8% of the total labor force and a consistent 70 to 80% of college students are both currently in the labor market and formally enrolled in some form of postsecondary education or training (Carnevale et al., 2015).

While the trend of working and going to school is on the rise for all institutions of higher education, there are some trends that are reflected in the open door community college, especially in regard to age. Mature working learners (ages 30-54) are concentrated in open-admission community colleges and for-profit colleges and universities while young working learners (ages 16-29) tend to go to more selective institutions (Carnevale et al., 2015). Differences also exist in gender, as 60% of the working learners are female (Carnevale et al., 2015).

The impact of work on community college completion is noted by Johnson and Rochkind (2009, p. 4), whose findings reported that most students leave college because they are working to support themselves and going to school at the same time; the stress of work and study just becomes too difficult. It has also been demonstrated that the adverse of impacts of working on community college completion varies. The effects of work differ by student characteristics as low-income students, especially low income African Americans and Hispanics, tend to experience more negative effects of working on educational attainment. This appears to be the result of a lack of counseling, social capital, and other supports that are typically associated with a higher socioeconomic status or more selective colleges (Carnevale & Strohl, 2013).

Perhaps the area that has received the greatest attention in the research literature regarding community college students is the low level of academic preparedness these

institutions are often associated with. Sixty-eight percent of community college students require at least some developmental education course (Jaggars & Stacey, 2014). Historically numerous studies through the 1980s, 1990s, and well into the first decade of the 21st century have documented the high percentage of students entering the community college who are underprepared (Cohen & Brawer, 2008).

The open-door policy has no doubt offered refuge for those who are academically unprepared, yet go seeking higher education. Compounding the problem of the need for remediation is the students' misperception of their level of academic preparedness. Eighty-six percent of entering students indicated they were academically prepared (CCCSE, 2016).

A concern in the current study is that the under-preparedness of the community college student poses challenges for considering student success and completion. In addition, students who take more remedial courses graduate at lower rates (Adelman, 1998). Baily (2009) suggested that two-thirds or more of community college students enter college with academic skills weak enough in at least one major subject area to threaten their ability to succeed in college-level courses. Recent data further supported this in that only 28% of community college students who take a developmental education course go on to earn a degree within eight years, and many students assigned to developmental courses drop out before completing their sequence and enrolling in college-level courses (Jaggars & Stacey, 2014). Unfortunately, the complexity of community college completion extends beyond level of academic preparedness, but rather reflects a myriad of variables encompassed in the open-door framework.

Revolving door

Open admissions policies provide access for a diverse student body (Bailey, 2009); many of these differences also serve as impediments to student completion. The notable lack of success of these students has often resulted in community colleges being referred to as "revolving door" institutions (Derby & Smith, 2004). There are numerous obstacles that stand in the way of students completing their coursework and attaining community college degrees and certificates as attested to in the literature on this topic.

During the last part of the 20th century, it was revealed that only 20% of young people who began their higher education at two-year institutions graduated within three years (Wine et al., 2001). More recent research has suggested that fewer than half of entering community college students with a goal of earning a degree or certificate meet their goal within six years after beginning college (CCSE, 2012). According to a recent report from the National Student Clearinghouse (NSC), nearly half (46%) of all students who completed a degree at a four-year institution in 2013-14 had enrolled at a two-year institution at some point in the previous 10 years. These enrollment patterns are not just picking up the occasional community college course taken by students; of those students who had attended a two-year institution, 47% had enrolled in that sector for five or more terms (NSC, 2015). This data confirms what many have suspected, the open door is a revolving door and many factors are influencing students' ability and time it takes to complete a degree or certificate. Factors range from financial constraints, number of hours worked, care for dependents, or lack of academic preparedness.

Goldrick-Rab (2010) reported that after 3 years only 16% of first-time community college students who began college in 2003 had attained a credential of any kind while

another 40% were still enrolled and in pursuit. Goldrick-Rab also revealed that completion rates improved when the timeframe increased to 6 years instead of 3 years, with 36% community college students in 1995 earning a degree by 2001. Other research has supported these findings. Scrivener and Coghlan (2011) reported only one third of all students who enter community colleges with the intent to earn a degree or certificate actually meet this goal within 6 years. Recent data have indicated that only 40% of the degree-seeking students who started at a community college completed a degree or certificate either at the starting institution or at a different institution within six years (Shapiro, Dundar, Ziskin, Yuan, & Harrell, 2013).

One of the most highly noted issues that impedes community college student completion and graduation rates is that many community college students are under-prepared to complete the coursework necessary to attain their educational goals. Low community college success rates have been typically linked to lower levels of academic preparedness and the students' associated need for developmental or remedial instruction (Bailey, Jeong, & Cho, 2010; Jenkins, Jaggars, Roksa, Zeidenberg, & Cho, 2009). These students usually require extensive remedial education before beginning and then subsequently completing their college coursework, thus requiring a longer time to completion. This increased length to completion compounds factors associated with cost and time away from dependents and jobs. This, in turn, forces the students to pay more for their education and spend more time away from their families, and may require some students to work longer hours. Research supports that this is a cause for both lack of, as well as, increased time to completion (Johnson & Rochkind, 2009; Lloyd & Eckhardt, 2010; Marcus, 2011).

Community colleges and their students vary noticeably from their four-year counterparts. The community college differs in its mission, institutional focus, curricular functions, and services. This difference in mission is reflected by the community college serving a larger number of non-traditional students, working students with families, and first-generation college students. Similarly, community college students, due to open admissions policies, are much more likely to be academically unprepared that their counterparts attending four-year universities. Thus, community colleges have a higher dropout rate, and many of the students do not complete a certificate, diploma, or degree (Braxton et al., 2004; Cohen & Brawer, 2003; Dougherty, 2002). Examining variables that predict faculty-student interaction and increasing the understanding of how this impacts persistence and completion may assist in defining ways faculty can help community college students become more engaged and more successful in their educational endeavors. This is imperative to the community college completion agenda.

Community College Completion Agenda

There were more than 21 million students in enrolled in higher education in 2011, of which nearly 8 million attended the nation's 1,132 community colleges (American Association of Community Colleges, 2012). These numbers were largely due to the unprecedented surge in enrollment that reached its height during the recession in 2008 and 2009. During these years, the increase in enrollment at public 2-year institutions outpaced the overall enrollment increase across all sectors of higher education (Digest of Education Statistics, 2013). Since 2011, the U.S. Department of Education and the National Student Clearing House have released annual reports on higher education enrollments and both have indicated a continued nationwide decline in community college enrollment to date.

Nevertheless, a decrease in enrollment of older students has been the highest and the most consistent over the past 4 years (Juszkiewicz, 2016). While enrollment rates have steadily decreased since 2011, it was during this same time that the nation started to look beyond the amount of entering students and turned its attention to those who were leaving, with or without a certificate or degree.

The focus of the community college began to shift from access into the institution to student success, and the importance of creating more equity in student outcomes. U.S. Secretary of Education Margaret Spelling's Commission on the Future of Higher Education Report highlighted the need for increasing both access and success for "…every student in the nation" (*A Test of Leadership: Charting the Future of U.S. Higher Education*; 2006, p. 17). Then, in 2009, President Obama called for increasing the number of US citizens with postsecondary education, asking "…every American to commit to at least one year of more of higher education or training" (Address to Joint Session of Congress, 2009). Prior to this mandate, legislatures and postsecondary associations had increased scrutiny and were calling for an increase in accountability regarding how colleges and universities were educating their students (Bollag, 2004; Burd, 2004; Fleming, 2004; Strout, 2004). This period ushered in the era of the completion agenda.

Influenced by these two events, in April 2010, the American Association of Community Colleges (AACC) joined with five other national organizations (the Association for Community College Trustees, the Center for Community College Student Engagement, the League for Innovation in the Community College, the National Institute for Staff and Organizational Development, and the Phi Theta Kappa Honor Society) to express a joint commitment to student completion. This unprecedented union of forces resulted in the call to

graduate 50% more students with high-quality degrees and certificates by 2020 (AACC 2011). This resulted in numerous initiatives across the nation all focusing on completion. While the scope of these initiatives is beyond the prevue of this research the most prominent and relative are briefly explored.

Early attempts to demonstrate retention and completion rates at community colleges were fraught with data collection and analysis errors. Data analysis prior to the focus on completion was based primarily on enrollment trends (primarily growth), diversity in program offerings, facilities, and economic development opportunities, with limited to no attention given to graduation, or the success of the individual student (Moreset, 2013). Data beyond the simple statistics reported to the Post-Secondary Educational Data System (IPEDS) were not available. To that end, the American Association of Community Colleges, in collaboration with the Association of Community College Trustees and the College Board Advocacy and Policy Center, developed the Voluntary Framework of Accountability (VFA).

Voluntary framework of accountability

As the first and only national accountability framework developed by community colleges for community colleges, the VFA serves to provide such institutions with a fundamentally better ability to assess performance, identify areas for improvement, and clearly validate their commitment to their academic mission (AACC, 2012b). Perhaps most importantly, the primary focus of the measures encompassed by the VFA was to examine the progress and outcomes of all students who enrolled at the community college. The VFA uses a retrospective cohort tracking method for measuring the progress (after 2 years) and outcomes (after 6 years) of a student population that includes all students who enter in the fall, who are first-timers at that college and attend part-time or full-time. This was a

departure from the aggregated enrollment data that lacked comparability due to non-standardized terminology and collection methods. Thus, due to the "common framework" approach, community colleges can now benchmark their student progress and completion data against similar institutions (AACC, 2012b).

The AACC (2014) is now focused on increasing the level of institutional participation in hopes of demonstrating the full potential the VFA has to offer in increasing transparency, accountability, the profits of benchmarking, and the promise of enhanced performance. In early 2017, the AACC launched a two-tier VFA participation model designed to provide all AACC member colleges with access to the VFA (Ashford, 2016). The VFA will finally provide a system that enables community colleges to evaluate their effectiveness and demonstrate to legislators, funders, and other key decision makers the substantial value they can deliver to students and communities.

Achieve the dream

Achieving the Dream (ATD) is another initiative conceived and launched in 2004 by the Lumina Foundation (funding source) and founding partner organizations which strives to close achievement gaps. This national nonprofit organization represents one of the nation's most strategic and widespread efforts that grew out of the completion agenda. The vision of ATD was "…to lead the most comprehensive, evidence-based reform movement for community college student success in higher education history, resulting in significantly improved lives and greater global economic competitiveness for the United States" (Achieving the Dream, 2012a, para. 2).

Today, ATD represents the most comprehensive non-governmental reform movement for student success in higher education history. The ATD initiative is now

comprised of over 200 institutions of higher education, 100 coaches and advisors, 15 state policy teams, and numerous investors and partners working throughout 35 states and the District of Columbia. ATD claims to be serving more than 4 million community college students and as a result they have a better chance of realizing greater economic opportunity and achieving their dreams (Achieving the Dream, 2012a).

Of importance to this study is that ATD could serve as conduit for deploying models for improving faculty-student relationships. Currently, faculty and staff engagement serve as the key focus. According to ATD, "…through thoughtful, evidence-based teaching and learning reforms and professional development training, coupled with well documented faculty and staff engagement strategies, millions of students have benefited" (ATD, 2017a). In 2016, ATD announced a two-year planning and deployment grant that will work to develop practices and policies to support adjunct faculty to improve instruction and become engaged in student success initiatives (ATD, 2017b). This particular focus is of significance as it can directly address issues associated with faculty and student interactions.

Survey of student engagement

Another 21st century initiative is led by the Center for Community College Student Engagement (CCCSE). The University of Texas, College of Education's CCCSE had long been advocating for completion strategies through its Community College Survey of Student Engagement (CCSSE). While not officially formed until 2008, CCCSE has expanded its scope to include survey research, focus group work, and related services for community and technical colleges interested in improving educational quality (CCCSE, 2017). CCSSE was developed with the purpose of gaining insight into effective educational practices; of

particular importance is that it is focused solely on community colleges. The CCSSE survey gleans data on five key areas of engagement: active and collaborative learning, student effort, academic challenge, student–faculty interaction, and support for learners (McClenney, 2006). These measures of engagement are evaluated in terms of their relationship with student outcome measures that include academic success, early academic measures, persistence measures, completion measures, and longevity measures. Factors that affect the measurement of outcomes include the number of terms enrolled in courses, number of credits completed, GPA, success in gate-keeper courses, first-to-second-term persistence, first-to-second-year persistence, transfer-ready status, and degree or certificate completion (McClenney et al., 2007). Since 2002, CCCSE has surveyed nearly 3 million community college students and has served over 900 community colleges. These member colleges represent an overwhelming majority of all accredited, public, associate-degree-granting institutions in the United States (CCCSE, 2017). Since its inception, CCSSE results have revealed that an increase in student engagement at the community college positively correlates with student learning outcomes.

Analyses of CCSSE survey data have provided greater insight and evidenced based approaches to understanding the uniqueness of the community college learning environment. One key finding was while community colleges are striving to create more engagement opportunities for their students, an overwhelming majority of students (84%) indicated that they do not participate in college activities (CCSSE, 2004). Additional results from CCSSE suggested this lack of engagement may be because more than 60% of all community college students enroll on a part-time basis. Results have also revealed that community college students who work part time are significantly less likely to communicate with instructors about grades or assignments or seek input from faculty or staff members about their

educational and career aspirations (CCSSE, 2005). These students are also more likely to engage with their peers on course work inside the classroom rather than making additional time to work on course work after class (CCSSE, 2005).

Overall, CCSSE results have revealed the most promise in providing insight toward completion with regard to the measure of engagement on student outcomes. The data indicate that regardless of the obstacles many community college students face, persistence outcomes, including number of terms enrolled, credit hours completed, first-to second term persistence, and first-to-second-year persistence, were correlated positively with the Support for Learners engagement factor (McClenney, 2007; McClenney et al., 2007) Price and Tovar (2014) substantiated this claim as their research indicated that three of the five student engagement benchmarks: active and collaborative learning, student-faculty interaction, and support for earners "correlated to a statistically significant degree with IPEDS graduation rates" (pp. 774-775). More than a decade of CCSSE data show a consistent rise in engagement (CCSSE, 2015). These data would suggest that colleges are developing and implementing practices that increase the level of student engagement, thus serving the mission of the completion agenda.

Of particular importance to this study is engagement between faculty and students. CCSSE's student-faculty interaction benchmark measures the extent to which students and faculty communicate about items related to both in and out of classroom instruction. These indicators are academic performance, career plans, and course content and assignments. There was not, however, a clear pattern indicating that interaction between students and faculty had its greatest impact in any particular outcome domain (McClenny et al., 2007).

CCSSE research further demonstrated that student-faculty interaction was correlated with number of terms enrolled and credit hours completed, and GPA, and the credit completion ratio. Positive results that were present in some of the early studies did not emerge in other studies, suggesting the results for the student-faculty interaction benchmark has been related to both academic and persistence outcomes (McClenny et al., 2007)

In 2015, CCSSE released findings from eleven years of study that reflected a steady rise in engagement. Most notably were increases in all five areas of student-faculty interaction. The greatest increase has been the use of email to communicate with an instructor. The frequency of faculty and student communication via email for students who indicated *sometimes, often* or *very often* increased from 79% to 96% in fulltime students and 66% to 92% in part-time students (CCSSE, 2015). Similar gains were shown for both developmental and non-developmental students. These trends suggest that faculty-student interaction outside of the classroom has increased over the past decade. While earlier research did not clearly demonstrate the full impact of faculty-student interaction (McLenny et al., 2007), this growing trend suggests further research is needed to truly understand the relationship of faculty-student engagement and the effects it has on persistence and completion.

Faculty-student interaction

Numerous studies and reports point to the beneficial effects associated with student contact with faculty members (Astin 1977, 1985; Kuh et al., 1991; Lamport, 1993; Pascarella, 1985; Pascarella & Terenzini, 1976, 1979b, 1991, 2005; Terenzini, Pascarella, & Blimling, 1996; Terenzini et al., 1995; Tinto, 1993). Meaningful interaction between students and faculty has been demonstrated to have a positive effect that works across various

surroundings to promote student development and persistence (Astin, 1993b; Chickering & Gamsnon, 1987; Kuh, 2003a; Kuh & Hu, 2001; Pascarella & Terenzini, 2001, 2005). Faculty-student interaction contributes favorably also to educational goal setting and goal attainment, changes in attitude, and a more positive pursuit of scholarly careers (Pascarella & Terenzini, 2005). While these studies have provided evidence as to the general effects of faculty-student interaction, limited studies have examined the complexities as to why some students readily in engage with faculty and others do not.

The findings of a study by Cotton and Wilson (2006) revealed faculty-student interaction typically occurred infrequently and was not as a regular part of a students' academic experience. Jaasma and Koper (1999) found that less than half of the students in their study reported they never had visited a faculty member's office. Additional studies have revealed that the majority of the information shared when faculty and students do interact outside of classroom settings is related to questions regarding course work (Anaya & Cole, 2001; Cotton & Wilson, 2006; Jaasma & Koper, 1999).

Cotton and Wilson (2006) indicated that faculty-student interaction comes in various forms that include formal versus informal and social versus academic. Differing types of interactions may reveal different effects upon students. Research is only beginning to fully develop the context in which faculty and students interact and its implications for student outcomes (Hoffman, 2014). Endo and Harpel (1982) found that the frequency of informal contact between faculty and students was associated with social, personal, and intellectual outcomes, and student satisfaction with their educational experience. Their results also indicated that informal interactions between faculty and students have a greater impact on more student outcomes than do formal interactions. In a qualitative study of examining out of

class interactions, Kuh (1995) found that informal faculty-student interaction influences aspects of students' self-concept, such as self-worth and confidence, thus effecting academic skills.

Cotton and Wilson (2006) also found that students' interactions with faculty outside of the classroom increases students comfort level for in-class interaction, but their findings also indicated students' perceptions that faculty often appear to be rushed when outside the classroom setting. Similarly, Jaasma and Koper (1999) found that the instructors' nonverbal immediacy correlated with the length of time students visited instructors' offices for both academic and social interactions. Nadler and Nadler (2001) found that there was no difference in gender with regard to length of time faculty-student interaction occurred outside of the classroom. In general, it was reported that out-of-class interactions appeared to positively shape students' perceptions of the campus environment and had a positive influence on educational aspirations (Gurin & Epps, 1975; Hearn, 1987; Pascarella, 1985) and degree completion (Pascarella, Smart, & Ethington, 1986; Stoecker, Pascarella, & Wolfe, 1988). Although the reason for this relationship is not clear, it seems likely that when faculty engage students outside of the classroom, and these interactions are positive, students may feel affirmed and develop a stronger bond with the institution (Kuh et al., 1994). These interactions may reinforce a student's initial goals and deepen the commitment to graduate (Pascarella & Terenzini, 1991, 2005).

Theoretical Frameworks for Study

Four theoretical frameworks were applied in this study: (a) engagement; (b) social and cultural capital; (c) environmental pull factors; and (d) quality of effort. Each framework is explained to build an understanding of how faculty-student interaction in a community

college setting impacts persistence and completion, and to identify student characteristics that may influence these interactions.

Engagement

Student engagement is a commonly defined term and applied broadly to refer to the extent students are actively involved in significant educational experiences and activities. Research has indicated that student engagement is tied to desired educational outcomes, such as increased learning, persistence in college, and graduation (Pascarella & Terenzini, 2005). Kuh (2009) defined student engagement as "…the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities" (p. 683). Engagement may refer to salient academic, and non-academic, aspects of the student experience (Coates, 2005).

Engagement theory in education may largely be attributed to the early works of three scholars: Astin, Pace, and Tinto. Astin's (1985) theory of involvement is based on the premise that student learning is a function of a student's level of academic and social involvement within the institutional environment. Similarly, Pace's (1984) theory, formally known as quality of effort, indicated that student involvement is a function of the opportunities that an institution offers and by which the students make use of those opportunities in their academic and intellectual experiences, and their personal or social experiences. Last, Tinto's (1993) model of student departure emphasized the role of integration to engagement as it relates to persistence in college. Tinto (1993) identified three key sources of student departure: academic difficulties, the failure of individuals to decide their goals as they relate to educational and career, and their failure to become or remain assimilated in the academic and social life of the institution. All of these relate directly to the

students' level of engagement. The primary principle is that involvement refers to "…the amount of physical and psychological energy that a student devotes to the academic experience" (Laanan, 2007, p. 40). While these theories provide a unique approach to understating and exploring the role of students in the college experience, it is in their totality that the fundamental application of engagement theory is strengthened.

Social and cultural capital

The concept of social and cultural capital has become increasingly familiar to educational researchers. While capital is most often associated specifically with defined economic categories, the theoretical concepts of social and cultural transcend to something more than monetary value. Social and cultural capital have their roots in the work of Pierre Bourdieu and, while both are closely related, they are uniquely distinct (Bourdieu, 1986; Coleman, 1988, 2014; Wells, 2008). Amid the intensified use of social and cultural capital as a theoretical framework in educational research, many different definitions and misconceptions of the theories remain (Winkle-Wagner, 2010).

Cultural capital is essentially the cultural relevant knowledge, competencies, skills, or abilities valued in a particular context (Bourdieu, 1986; Bourdieu & Passeron, 1977). It comprises culture-based elements and indicators of symbolic wealth that help to define one's social class or cultural standing (Wells, 2008). For Bourdieu, cultural capital encompasses a broad array of social skills based on knowledge closely tied to linguistic competencies. These social mannerisms, preferences, and cultural orientations he refers to as "subtle modalities" are closely related to culture and language (Bourdieu, 1977, p. 82). As such, cultural capital is frequently inherited from one's family and thus retains elements of one's socio-economic status (McDonough, 1997, 1998; Swartz, 1997). Bourdieu (1986) further identified three

variants of cultural capital: the first being the accumulation of cultural capital as embodied in one's mind. This accumulation begins early in one's childhood and is the result of learned cultural information or as acquired through the socialization process. This increase in knowledge is most directly influenced by parental investment and, additionally, by other family members or influential adults. Bourdieu's second variant is that cultural capital also exists in institutionalized forms, most notably as education. The third variant is the objectified state or cultural goods. This includes objects or items that reinforce this accumulation of knowledge, such as books, paintings, and artifacts. All three variants, in essence, serve as a form of cultural knowledge that provide guidance into navigating the individuals' social interactions.

Bourdieu (1986) differentiated social capital from cultural capital in that social capital consists of relationships of mutual acquaintance or rather group membership from which one draws capital from the collectively owned. In essence, social capital are the social and personal relationships that people capitalize on for personal gain. Social networks must be created through investment tactics oriented to the institutionalization of group relations, usable as a reliable source for benefit (Portes, 1998). Furthermore, Bourdieu (1985) noted that "…the profits which accrue from membership in a group are the basis of the solidarity which makes them possible" (p. 249). Essentially, social capital is defined by its function. Coleman (1988) explained that social capital is made of many different entities with essentially two elements in common: "…they all consist of some aspect of social structures, and they facilitate certain actions of actors-whether persons or corporate actors-within the structure" (p. 98). Furthermore, Coleman indicated that social capital is productive: "…making possible the achievement of certain ends that in its absence would not be

possible" (p. 98). Social capital is also contextual in that a given arrangement of social capital that is beneficial in facilitating certain actions may prove to not be or even counter for other conditions.

It has become apparent when defining social and cultural capital that these concepts are hard to separate. This has been further evidenced because much of the educational research that deploy social and cultural capital theoretical frameworks often do not necessarily assign variables that are socio-cultural in nature to either category, but rather use them simultaneously (Croninger & Lee, 2001; Perna, 2000; Wells, 2008). Nevertheless, a central theme of both social and cultural capital is that they require an investment of a particular kind and that this investment can secure a return (Reay, 2004). It was Bourdieu's premise that one's culture can act as a "power resource" (Swartz, 1997, p. 75) in social settings. Thus, one could "…exchange cultural knowledge, skills, abilities, norms, preferences, or mannerisms for social rewards such as acceptance, recognition, inclusion, or even social mobility" (Winkle-Wagner, 2010, p .5). Applications of this ideology for educational research have correspondingly positioned cultural and social capital acts as a form of social currency in educational settings. Bourdieu (1986), himself, applied this concept to educational attainment:

> The notion of cultural capital initially presented itself to me, in the course of research, as a theoretical hypothesis which made it possible to explain the unequal scholastic achievement of children originating from different social classes by relating academic success, i.e., the specific profits which children from the different classes and class fractions can obtain in the academic market, to the distribution of cultural capital between the classes and class fractions. (Bourdieu, 1986, p. 243)

It is from this basic premise that cultural and social capital have increasingly been used as a theoretical framework for studying the expression of social inequality as it pertains

to educational practices, academic success, and attainment (Berger, 2000; Breen & Jonsson, 2005; Cabrera & La Nasa, 2001; DiMaggio, 1982; Lareau, 2003; Lareau & Horvat, 1999; McDonough, 1997; Roscigno & Ainsworth-Darnell, 1999; Sullivan, 2001; Tzanakis, 2011; Walpole, 2003; Yasso, 2005). Additional research has been conducted regarding the influence of cultural capital on the college selection process (Amaury, 2004; Freeman, 1997; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Perna, 2000). The theoretical frameworks of social and cultural capital have and continue to serve as guidance for educational research.

Central to Bourdieu's theory are the potential sources of inequality in access to resources. This concept is based on the relationship between one's individual culture and the culture of the society at large or the individual institutions (place) within that society. To describe this, Bourdieu used the terms habitus and field, respectively, to describe this relationship (Lareau, 2001). Habitus is a system of dispositions, values, or a lifestyle from which various forms of social training or learning and past experience take place (Bourdieu, 1986). It may also be thought of as the individual's socialization process. It encompasses the individual's surroundings, such as home, school, and other social institutions. A field is a structured system of social relations at a micro and macro level (Grenfell & James, 1998). When an individual's habitus is consistent with the field in which he or she is operating, that is, when the field is familiar to and understood by the individual, he or she enjoys a social advantage (Grenfell & James, 1998; Lareau & Horvat, 1999). When an individual's habitus is not consistent within the field with those for whom it is, a social advantage is gained.

The reproduction of cultural capital in the form of learning is directly related to the position of parental influence, and thus, will be reflective of class reproduction and social capital acquisition. Researchers in education have adopted this as parental involvement (Lee

& Bowen, 2006; Sewell & Shah, 1968; Smith, 198; Swatz, 1997). This study employed cultural capital in relationship to the frequency with which faculty-student interaction occurs in the community college setting. More specifically, measures of parental investment based on student responses are used in predictive modeling to determine which of those students with higher cultural capital will more frequently engage with their teachers

Environmental pull factors

Environmental pull factors are lifestyle characteristics that have been identified to have a "…pulling-away effect both on the student's decision to remain in enrolled in college and on his or her social and academic integration on campus" (Nora, 2003 p. 59). These factors include family responsibility such as providing care for a dependent, working off campus and commuting to college on a daily basis. Research has indicated that students who had financial responsibilities or were working off campus did not fully integrate both socially and academically, resulting in abandoning their pursuit of a degree (Nora et al., 1996). These pull factors limited study time and time on campus that might have been used to participate in student groups or other activities that may support social and academic integration (Nora, 2003). Given that environmental pull factors influence degree attainment and student engagement they may influence the frequency of faculty-student interaction.

The majority of American undergraduates work for pay while enrolled in college (King, 1980). Working while in college is particularly true for students who attend community colleges.

The AACC (2017) reported that 41% of part-time students worked a fulltime job and 40% of full-time students were employed part-time; 22% of community college students attending full-time had a part-time job, and 32% of part-time students had a part-time job.

Working students reported that it impacted the number of courses took and negatively impacted their academic performance (NCES, 1989). Given these findings working may have a relationship with the frequency of faculty-student interaction.

Astin (199) found that working full-time negatively impacted completion of a bachelor's degree, was negatively correlated with GPA, graduating with honors and also enrollment in graduate or professional school. Additionally, Astin reported there were differences for those that worked on campus and those that worked off campus while attending college. Degree attainment was negatively influenced for those students working part-time and fulltime off campus. Working a part-time job on campus positively influenced degree attainment (Astin, 1993). Working off campus was not only found to have a significant adverse effect on persistence for minorities, but also the likelihood of working off-campus reduced the chance of persisting by 36%. This is similar to findings reported in previous studies on student persistence (Nora & Wedham, 1991; Nora & Cabrera, 1992).

Recent research has demonstrated that the negative influences of work relate to lower levels of perceived gains in personal and social development for community college students (Ethington & Horn, 2007). One study reported that employment over 20 hours per week negatively impacted persistence (Bean & Metzner, 1985). Findings of a study by Miller, Danner, and Staten's (2008) revealed that university students who worked long hours were less engaged in campus activities, had lower GPAs and were less likely to interact with faculty. Terriquez (2015) reported that the unique job constraints posed to the undocumented student had a negative impact on degree attainment. Wirt and Yeager (2014) found that hours of work per week at an outside job was not a predictor of faculty-student interaction. This

study looked at self-reported hours per week caring for a dependent and the relationship it may or may not have had with the frequency of faculty-student interaction.

The AACC (2017) reported that 17% of community college students were a single parent. Sorey and Duggan (2008) reported that the demands of child-rearing could serve as a barrier to college persistence. A similar finding was reported by Hagedorn (1993, as cited by Nora et al., 1996), who found that for a nontraditional student population, being married reduced the likelihood of persistence by 83%. Scott, Burns, and Cooney (1996) reported that the primary reason older female students with children drop out of college is family responsibilities. Women in lower socioeconomic environments, in particular, lack both financial and family support. The presence of children for minorities reduces the likelihood of persisting in college by a startling 87% (Nora et al., 1996).

Nevertheless, some studies have reported no evidence that having young children to care for significantly lower college attainment (Horn, 1996; Jacobs & King, 2002). In addition, some mothers may use environmental pull factors as a decisive, motivating factor by using their academic pursuits regarding being role models for their children (Reay, 2003). Kelly (1982) suggested that when this occurs, women become more academically motivated. Conversely, Ethington and Horn (2007) espoused that family responsibilities having a significant positive influence on effort and degree attainment is counterintuitive; one would expect negative influence from family responsibilities similar to that found for job responsibilities within the framework of environmental pull factors. The current study examined the relationship between having a child living at home, hours per week spent caring for dependents and the frequency of faculty-student iteration.

There are limited references in the literature about the environmental pull factor of students commuting to and from class. Just as hours spent working and caring for a dependent were shown to have a negative influence on student degree attainment and student engagement it is possible that hours spent commuting may too. In the academic and social environment of the college. Nora (2003) reported having to commute to college was found to affect student decisions to continue in college, even though there were no differences found between minorities and non-minorities (Nora, 2003). This study looked at the relationship that distance of commute to and from class may or may not have had with faculty-student interaction.

Quality of effort

Early reports on student effort were from findings of the National Commission on Excellence in Education analysis of the College Student Experiences questionnaire (Pace, 1984). A major conclusion of the study was that once students got to college, what counted most was what they did; furthermore, the greatest predictor of achievement was quality effort (Pace, 1982). Pace's early definitions of effort explored all levels of student involvement in the collegiate experience, ranging from use of facilities to experiences, such as involvement in writing clubs, working on committees, and even engagement with faculty. Pace reported that sheer time spent on academic work (number of hours a week) was related to progress toward objectives and to gains in general educational performance, gains in intellectual competence, and those were reflected in grades. Additional studies have substantiated Pace's early work in supporting that student effort is a leading predictor in student success (Fraser & Killen, 2005; Nicholls, 1978). More specifically, Goodboy and Myers (2008) reported that students who are self-motivated and generally have high levels of effort in all their classes,

tend to find their classes more challenging than students who do not generally have high levels of effort and that this maybe positively influenced by teacher approval.

This researcher sought to employ quality of effort as a variable in relationship to frequency of faculty-student interaction. In particular, quality of effort was measured by amount of time students spent on academic related activities outside of the classroom based on student responses. This framework was used in predictive modeling to determine if those students with higher quality of effort would more frequently engage with their teachers.

Summary

The purpose of this study was to explore student characteristics and their relationship to faculty-student interaction at community colleges to further the understanding of how faculty-student interaction in a community college setting impacts persistence and completion, and to identify student characteristics that may influence these interactions. The literature review focused on the unique characteristics that led to the inception and mission of the community college and how these factors have played in the modern context of completion. A brief overview of the unique characteristics of community college students was provided in comparison to those in other four-year higher education institutions to reveal the emergence of the concept of the revolving door, or the cafeteria-style service model. The nation's new completion agenda was summarized as it pertains to a modern community college focus on persistence, retention, and student completion, rather than open door access and increasing enrollment. Then a brief overview was provided of the concepts and the definitions of student success, and how they relate to the completion agenda, concluding with a brief overview of the supporting theoretical frameworks that informed the theoretical model

selected for testing and applications in this study. The next chapter will present the methodology used to conduct the study.

CHAPTER 3. METHODOLOGY

The purpose of the present investigation was to examine the relationship of student characteristics associated with demographic, academic, environmental pull factors, social and cultural capital and student effort to the frequency of faculty-student interaction in the community college. The researcher used three secondary data sets, merged into one, from a medium size community college located in the Midwest. The survey instruments included the Community College Student Report (CCSR) from the CCSSE and the Institutional Entering Orientation Student Survey (IEOSS) from Any Community College (ACC) (pseudonym). The IEOSS was an institutionally developed survey designed to collect general information from all entering students. Results from these surveys were combined with selected data from the institution's student enrollment management database, the third secondary data set. The findings can potentially be used in the development of models to increase the frequency of faculty-student interaction at community colleges.

Environmental pull factors, student effort, social and cultural capital have revealed influence on retention and completion for students in community colleges (Braxton et al., 2004; Chen, 2005; Hawley & Harris, 2005; King &Bannon, 2002; Marti, 2006, 2009; Nora, 2003; McKinney &Novak, 2012; Nora &Wedham, 1991; Nora, Cabrera, Hagedorn, &Pascerella, 1996; Sandoval-Lucero et al., 2014; Schimid &Abell, 2003; Tinto, 2004). The purpose of the present investigation was to examine the relationship of these student characteristics to the frequency of faculty-student interaction in the community college. This quantitative analysis examined the following questions and hypotheses:

Research Questions

The following research questions were used to frame the study:

Descriptive

1. What are the demographic characteristics of the study participants?
2. What are the frequency and types of faculty-student interaction reported by the participants?

Inferential

3. What relationship, if any, exists between the frequency of faculty-student interactions and demographic variables (gender, race, age, and marital status)?
4. What relationship, if any, exists between the frequency of faculty-student interaction and student experiences with environmental pull factors (hours worked per week, distance commuting to and from class, having child/dependent living in home, hours spent caring for dependent)?
5. What relationship, if any, exists between the frequency of faculty-student interaction and student effort (preparing two or more draft papers or assignments prior to submission, hours per week preparing for class, coming to class unprepared, skipping class, tutor and skills lab use)?
6. What relationship, if any, exists between the frequency of faculty-student interaction and social and cultural capital (first generation and non-first-generation college students, native English speakers and non-native English speakers, need of assistance completing the FAFSA, and Pell eligibility)?

7. What relationship, if any, exists between the frequency of faculty-student interaction and academic variables (GPA at time of survey, full-time or less than fulltime enrollment status, degree type, degree completion in 200% of time)?
8. To what extent can the frequency of faculty-student interaction be predicted by environmental pull factors, student effort, social and cultural capital and academic variables?

Hypotheses

The following hypotheses tested in the present study were:

H1: There is no significant relationship in frequency of faculty-student interaction and demographic characteristics.

a. There is no significant relationship in frequency of faculty-student interaction and age.
b. There is no significant relationship in frequency of faculty-student interaction and race/ethnicity.
c. There is no significant relationship in frequency of faculty-student interaction and marital status.
d. There is no significant relationship in frequency of faculty-student interaction and fulltime and part-time enrollment status.

H2: There is no significant relationship in frequency of faculty-student interaction and environmental pull factors.

a. There is no significant relationship in frequency of faculty-student interaction for number of hours worked per week.

b. There is no significant relationship in frequency of faculty-student interaction for distance commuting to and from school.

c. There is no significant relationship in frequency of faculty-student interaction for having child/dependent living in home or not.

d. There is no significant relationship in in frequency of faculty-student interaction and hours spent caring for dependent per week.

H3: There is no significant relationship in frequency of faculty-student interaction and student effort.

a. There is no significant relationship in frequency of faculty-student interaction and the frequency of preparing two or more daft papers or assignment prior to submission.

b. There is no significant relationship in frequency of faculty-student interaction and frequency of skipping class.

c. There is no significant relationship in the frequency of faculty-student interaction and frequency of coming to class unprepared.

d. There is no significant relationship in the frequency of faculty-student interaction and frequency of using skills labs.

e. There is no significant relationship in frequency of faculty-student interaction and frequency of using tutoring services.

H4: There is no significant relationship in frequency of faculty-student interaction and social and cultural capital.

a. There is no significant relationship in frequency of faculty-student interaction for first-generation and non-first-generation college students.

b. There is no significant relationship ~~for~~ in frequency of faculty-student interaction for native English speakers and non-native English speakers.
c. There is no significant relationship in frequency of faculty-student interaction for those who need assistance completing the FAFSA and those who do not.
d. There is no significant relationship in frequency of faculty-student interaction for those who are Pell eligible and those who are not.

H5: There is no significant relationship in frequency of faculty-student interactions and academic variables.

a. There is no significant relationship in frequency of faculty-student interaction for degree completion or not within 200% of time.
b. There is no significant relationship in frequency of faculty-student interaction for GPA at the time of the survey.
c. There is no significant relationship in frequency of faculty-student interaction for degree type, Liberal Arts transfer or workforce non-transfer.
d. There is no significant relationship in frequency of faculty-student interaction for enrollment status of full-time and less than full-time.

H6: There is no significant prediction of faculty-student interaction by environmental pull factors, student effort and social and cultural capital.

Research Design

This study utilized a quantitative research design which applied a combination of survey and correlational research (Creswell, 2014). The research design is non-experimental in nature in that the researcher had no control over the levels of the independent variables; "…the researcher can define the independent variable but cannot assign participants to its

various levels" (Mertler & Vannatta, 2013 p.2). Student responses were used to identify environmental pull factors, social and cultural capital, and quality of effort measures that were then examined in relation to responses to questions regarding the frequency of interactions with faculty as reported through six questions. Creswell (2012) identified a prediction research design as one in which the purpose is to identify variables that will predict an outcome or criterion. This study utilized survey responses and recorded data of the identified theoretical framework models as independent variables, and the frequency that students reported interacting with faculty as the dependent variable.

Most research begins with an investigation to learn what is already known and what remains to be learned about a topic (Creswell, 2014), including related and supporting literature, but one should also consider previously collected data on the topic (Dale, Arbor, & Procter, 1988; Doolan & Froelicher, 2009). Data may already exist that can be utilized in addressing research questions. This study used survey data in combination with data from an academic institution's student data records system. All data used in this study were secondary in nature and, while not collected for the intended subject of this study, were representative of the types of data sources currently available to most community colleges.

Secondary data analysis is analysis of data that were collected by someone else for another primary purpose (Trzesniewski & Donnellan, 2011; Vartanian, 2011). Some advantages of working with secondary data sets are that they are often less costly, take less time to organize, often are already prepared for analysis with most statistical software (organization, coding, etc.), and can address a wider array of questions beyond the researcher 's intended purpose (Vartanian). While secondary data sets have some benefits, they are not without limitations. Secondary data sets often lack control over the framing and wording of

survey items, and it may not be possible to obtain follow-up data or information due to the lack of unique identifiers (Vartanian). They may be quite large in nature, thus often taking researchers quite some time to fully understand; however, they may also be lacking in sample size when it comes to examining specific subpopulations (Vartanian). Associated benefits and delimitations of the secondary data sets used in this study are discussed in following sections as appropriate.

Descriptive statistics and frequency distributions were used to provide a profile of the study participants. Comparative statistics were used to evaluate the relationship between independent and dependent variables as appropriate. Pearson correlation analysis was used to identify significant correlations between the independent variables and the dependent variable as necessary. Multiple regression analysis was used to test the predictability of the independent variables for the dependent variable.

Institutional Description

The study site was a non-district, single campus community college, Any Community College (ACC) (pseudonym), located in the Midwest and serving a metro area population of 170,612 people**.** ACC serves all or part of a ten-county area that is comprised of nine separate service districts. ACC has six satellite locations that are within a thirty-five-mile radius of the main campus. The study college offers more than 45 one-year and two-year degree credit programs. A major state university is located approximately 12 miles from ACC's main campus and serves as the primary transfer destination for many of the college's students. The college's student population is comprised of both urban residents and is also made up of commuter students residing in rural communities with population sizes typically less than 2,500.

ACC had an enrollment of 5,809 individuals (unduplicated headcount) for the fall 2013 semester of which 52.8% were enrolled fulltime. During this same semester the ethnic composition of the student population was 86% white, 8% Black or African American, 3% Hispanic/Latino, and 1% Asian. The female population for the fall 2013 semester was 57%.

Data Collection

The data used for this study included three secondary data sets, two of which were surveys (IEOSS and CCSR) conducted during the 2012-2013 and 2014-2015 academic years. The third data source was drawn from the institution's student enrollment management system (EMS). All data were provided by ACC's Director of Institutional Research with no unique individual indicators. Data were analyzed from historical data collected from the CCSR in the spring 2013 and spring 2015 semesters. Corresponding self-reported student identification numbers from the CCSSE participants were then matched with responses from the IEOSS and selected variables from the EMS. The CCSSE relies on students' self-reports, which are usually valid if they satisfy three conditions: (a) when respondents know the information requested, (b) if the questions are phrased unambiguously, and (c) if respondents think the questions merit a serious and thoughtful response (Kuh & Hu, 2001). Both the CCSSE and the IEOSS satisfied these conditions. The use of self-reported data may be the only functional method to access the desired information for certain variables (Koljatic & Kuh, 2001). Data from the EMS system was not self-reported, but rather obtained as defined by the institutions academic guidelines and practices. Discussion of data regarding collection techniques, validity, and variables used from each source are provided as follows.

All data from each individual survey, student demographic data, and other relevant fields from the EMS were compiled electronically. At no time were individually identifiable

data disclosed. While the survey data in and of itself are cross-sectional in nature, the ability to connect the survey data with information contained in the EMS allowed for longitudinal attributes to be included. These served as measures of students' academic characteristics in the form of GPA and completion (graduation).

Secondary data sets

With the shift to a focus on completion by community colleges, there has been an increased emphasis on the identification and widespread use of metrics for the purpose of continuous improvement and accountability surrounding student success (Alfred, Shults, & Seybert, 2007). Experts in institutional research have started three national projects to help community-college leaders share data that will provide them information on their institutions' performance. These projects include: the Kansas Study, the National Community College Benchmark Project, and Achieving the Dream (Ashburn, 2006). All contain valuable information regarding student persistence, remediation, transfer, and overall community college student characteristics. Accompanying this undertaking has been the development or rejuvenation of numerous widespread national data collection movements such as IPEDS, CCSSE, VFA, and Complete College America (CCA). While such data has been used in broad scale national analyses or for institutional benchmarking, it has had less impact and use at the intuitional level. The use of secondary data sets integrated with enrollment management data and institutional specific survey information provide for greater insight and applicability at the local intuitional level. Multiple sources of data can provide a better view of the student experience (Phillips & Horowitz, 2013). The understanding and use of secondary data sets are crucial to advancing research practices and applying the results. This

study emphasized the importance of secondary, existing data sets and their uses for future research in the community college environment.

The collection and use of the data are just one critical component of approaches to increasing student success in community colleges. Among offices of institutional research the problem is not a lack of data. Colleges typically have more data than they can use. The issue is the appropriate use of those data. Most institutional research offices at community colleges focus on enrollment management and related business functions of the college rather than on measuring, much less analyzing, student success (Morest, 2005). Secondary data sets offer a framework for applying validated data collection methods to the institutional level of student success. Data collection, manipulation, and analysis are not enough.

Central to the use of data for student success is the need for community colleges to change the way they think and communicate about data. As the focus from simple analysis on enrollment trends to student success has shifted, community colleges must adopt applied knowledge management to successfully improve student performance (Hizmetli, 2014). Knowledge management refers to not just the identification and analysis of data, but rather to the set of practices that help improve the use and sharing of data and information in decision-making (Petrides & Nodine, 2003). The Institute for Evidenced Based Change (IEBC) has developed a three-part approach that focuses, not just on data collection efforts and storage, but also on organizational habits, with the recommendation that community colleges integrate data into their existing structures and practices (Phillips & Horrowitz, 2014). This type of approach, considering the rich data available through use of secondary data sets and nationally available institutional data sets for benchmarking, offers the most promise in understanding community college student success. Both knowledge management and use of

secondary data sets offer promising new techniques for institutional research in community colleges.

Community College Survey of Student Engagement (CCSSE)

The Community College Student Report (CCSR) survey instrument was developed by the research organization, The Community College Survey of Student Engagement (CCSSE), which was formed in 2001 as a project of the Community College Leadership Program at the University of Texas at Austin. As a result of the need to study quality and performance at two-year community colleges, CCSSE was established. CCSSE provides new information about community college quality and performance that enables institutions to improve student learning and retention. In addition, CCSSE provides policymakers and the public with extensive information, so they can evaluate the quality of undergraduate education at community colleges. To fulfill these goals, CCSSE developed the CCSR, a survey instrument designed to collect information on the processes, institutional practices, and student behaviors related to student engagement at community colleges (McClenney & Marti, 2006). For the purpose of this study, the terms CCSSE and the CCSR are used interchangeably. The recent popularity and widespread use of the survey instrument itself (CCSR) has led to it becoming synonymous with CCSSE (the organization) among many of its users.

The CCSSE has been validated through several detailed empirical studies (McClenney & Marti, 2006; McClenney, Marti, & Adkins, 2007). Validation took place through use of three different data sets: (a) the Florida community colleges; (b) the CCSSE Hispanic Student Success Consortium; and (c) 24 of the original ATD colleges. “The CCSSE validation research shows that CCSSE is measuring institutional practices and student

behaviors that matter-and therefore, that the CCSSE survey instrument is a valuable proxy indicator for student success" (McClenney, Marti, & Adkins, 2007, p. 2).

This study utilized secondary data from the CCSSE collected at ACC during the spring 2013 and 2015 semesters. ACC's Office of Institutional Research followed the survey guidelines as provided in the CCSSE Procedure Guide (CCSE, 2017). A copy of the complete survey instrument used is found in Appendix A. The CCSSE codebook is provided in Appendix B.

One benefit of using a secondary data set is that built in sampling techniques have already have been utilized and validated. CCSSE established sampling based on a stratified random cluster sample of credit classes. CCSSE determined "…the required number of course sections to be surveyed . . . by the total sample size needed to reduce sampling error and to ensure valid results" (CCSSE, 2006, para. 1). The in-class administration process increases sample sizes and supports the method of cluster sampling (Marti, 2006). CCSSE collects a list of all credit courses at the institution and bases the stratification upon the time of the day at which a class begins: 11:59 a.m. and earlier, 12:00 p.m. to 4:59 p.m., and 5:00 p.m. to 12:00 a.m. Stratification ensures that the number of classes in the sample during those time periods is proportional to the number of classes in the population of classes in the corresponding time periods. CCSSE samples include 160% of each college's target sample size to reduce the effects of scheduling issues, low enrollments, student duplication, and other factors that may prevent the college from surveying every student in the sample (CCSSE, 2017). This increases the likelihood that the sample is representative of the community colleges' overall population.

The CCSR's model development included conducting confirmatory factor analysis (CFA) to identify underlying latent constructs**.** Five underlying constructs emerged: (a) Active and Collaborative Learning; (b) Student Effort; (c) Academic Challenge; (d) Student-Faculty Interaction; and (e) Support for Learners (Marti, 2006; 2009). CFA demonstrated that factor analytic models sufficiently represented the 5 underlying constructs, thus establishing construct validity. It is these constructs that make the CCSR a relevant survey instrument and quality secondary data set to answer the research questions posed by this study. Of the five latent constructs, two are supported directly by the theoretical frameworks for which this study was positioned—Faculty-Student Interaction and Student Effort.

Faculty-student interaction is supported directly by both Astin's (1985) theory of involvement and Tinto's (1993) student engagement theory. Astin (1993) posited that if a positive relationship exists between faculty and student involvement, and student development and satisfaction, then as contact between students and faculty inside and outside of the classroom increases, student development and satisfaction also increase. Astin (1993) further established that faculty-student interaction has significant positive correlations with every academic attainment outcome. There is also a positive association between faculty-student interaction and students' satisfaction, and there is a positive association between faculty-student interactions and the amount of time that students devote to educationally purposeful activities (Kuh & Hu, 2001). Six questions describing faculty-student interaction are found in agreement with a single factor structure in the CCSSE for faculty-student interaction and were used for this study.

Pace's (1984) study revealed that sheer time spent on academic work (number of hours a week) was related to students' progress toward objectives, gains in general

educational performance and in intellectual competence as reflected in their grades. This is reflective of Tinto's (1993) model of student departure which emphasized engagement, the greater the student effort the more engaged they were. The effort placed on work is in direct relationship to the student's level of engagement in academic endeavors. Further, Goodboy and Myers (2008) reported that students who were self-motivated and generally had high levels of effort in all their classes, tended to find their classes more challenging than students who do not generally have high levels of effort and that this maybe positively influenced by teacher confirmation of that effort. A total of nine questions relating directly to student effort were found in agreement with a single factor for student effort in the CCSSE. Six of the nine questions were used in this study to examine the relationship between student effort and faculty-student interaction.

Environmental pull factors are characteristics that have been identified to have a pulling-away, or negative influence, on students and their pursuit of a college degree (Nora, 2003). These factors include: family responsibility such as providing care for a dependent, working off campus, and commuting to college on a daily basis. Although not referred to by CCSSE as environmental pull factors, several questions on the survey fell directly into this theoretical framework. The environmental pull factors utilized in this study included: hours per week working at an outside job, hours per week spent caring for a dependent, having a child living at home, and hours sent per week commuting.

In addition to faculty-student interaction, environmental pull factors and student effort, the CCSSE also offers a variety of questions related to student academic characteristics, student demographics and questions relating to social and cultural capital. The questions utilized in this study included: marital status, mother's and father's highest

level of education, levels of family support and status regarding development reading, writing and mathematics. All were examined in relationship to the frequency of faculty student interaction.

The CCSSE offers a unique opportunity for institutions to evaluate the level of student engagement and associated institutional practices across its campus. As an optional item, CCSSE offers students the opportunity to provide their student identification number. This was of particular importance to this study as it was the key field that allowed individual survey responses from CCSSE to be linked to information obtained from the IEOSS and the EMS.

Institutional Entering Orientation Student Survey (IEOSS)

Based on research and best practices for retention, many community colleges are implementing or upgrading their freshmen orientation programs; however, many still do not offer them (Hale, 2014). The national Survey of Entering Student Engagement (2008) found that 54% of community college students surveyed nationwide indicated they did not attend an on-campus orientation upon entering their community college. New students need help during the transition from high school or work to the college environment (Gordon & Grites, 1984). In light of this, many orientation programs are now becoming mandatory (Cuevas & Timmerman, 2010). The emergence of new student orientations is an approach to assisting in the unintended consequences of the cafeteria-style college. Such measures have been reported to have a positive impact on student retention (Hale, 2014). The ACC instituted a mandatory orientation for all entering students. As part of the orientation session, students were required to complete a student questionnaire that collected a variety of information

about entering students. The information collected from the survey served as one source of data for this study.

The survey was developed by the Office of Institutional Research with the purpose of gleaning relevant information about incoming students that would assist in better understanding their needs and serve to guide the alignment of services to better meet student needs. No official title was given to the survey instrument; however, it is referred to in this study as the Institutional Entering Orientation Student Survey (IEOSS). The complete survey instrument can be found in Appendix C. The questions ranged from topics of academic preparedness, degree aspirations, social and economic factors, preferred mode of course delivery, course schedule preferences, and how students learned about the college prior to enrollment. The instrument was designed to capture information related to the unique and local needs of the institution.

The IEOSS data were collected through an online survey as part of the orientation and registration process. Web-based surveys provide the advantage of access to unique populations, reduced costs, and savings of time; however, they often pose a problem with sampling because of the inability to specify a time frame for completion (Wright, 2005). In regard to the IEOSS, students were required to complete the survey prior to their registration for the mandatory orientation session. This strategy both maximized the number of participants and eliminated associated issues of time to complete the survey. Students were identified by their student identification number, as assigned during the admissions process. Demographic and other types of information that could be found within a student's admission application were not duplicated by IEOSS questions.

The IEOSS web based administration collected data from all enrolling students as they were in the admission process prior to enrollment in courses and prior to orientation session attendance. This procedure resulted in cross sectional data; data collected at one point in time (Creswell 2012). Cross-sectional designs are often used to measure community needs of educational services. This was the intent of the IEOSS, to better understand the attributes of the entering students to ensure services were available and that students were made aware of them. This data collection approach also resulted in a single stage sampling procedure. Single stage sampling is one in which the researcher has access to the names in the population and can sample the people directly (Creswell, 2012).

This study used variables from the IEOSS associated with social and cultural capital and environmental pull factors. The IEOSS presented limitations of use due to the framing of the survey items being of the survey questions were broader than needed for association with supporting theoretical frameworks. This is often a disadvantage of working with secondary data (Vartanian, 2011). The environmental pull factor variable for distance of daily commute to class was used. The social and cultural capital related variable of having internet access at home was used in this study. These questions were used to examine the relationship between social and cultural capital and environmental pull factors with faculty-student interaction.

Enrollment Management System (EMS)

Information and analytic resources are required for community colleges to monitor their performance and undertake continuous improvement (Alfred, Shults, & Seybert, 2007). The use of enrollment management systems or student information systems at community colleges-has historically been for state and federal reporting and enrollment tracking. With the shift toward focusing on the measurement of outcomes and the use of large scale

secondary data sets for analysis, IPEDS for example, many community colleges are now increasing their intuitional research capabilities to meet accountability requirements. Many experts in the field have noted that community colleges continue to lag behind institutional research efforts of their four-year counterparts (Ashburn, 2006). The focus on completion is forcing community colleges to look at their enrollment management systems as a primary source of data for measuring intuitional performance.

The third secondary data set utilized in this study was from select identified fields typically collected and stored within a community college's enrollment management system. Each of the two preceding data sets had a common unique identifier field (student identification number), making it possible to link individual results of the surveys with data stored in the enrollment management system. The ACC's Office of Institutional Research queried demographic information and variables relating to academic characteristics for the individuals who had completed the CCSSE and for which an identifiable student identification number had been self-reported. This approach allowed for data that was both longitudinal in nature and not self-reported. Data from the IOESS were also linked where available. Data were provided to the researcher for use with no unique identifying fields once the three data sets had been combined. Academic variables from the EMS that were utilized for this study included; GPA recorded at time of survey, degree major, and degree completion. Additional financial and demographic variables from the EMS that were utilized included: Pell eligibility, gender, race and age of the study participants. All variables from the EMS were used to examine their relationship with the frequency of faculty-student interaction.

Population and Sample

The CCSSE was administered at ACC during class sessions in the spring semesters of 2013 and 2015. The CCSSE survey is designed to be administered according every two years. The spring semesters of 2013 and 2015 represent the first two years that A~~A~~CC participated in CCSSE. The stratified random cluster sample of credit classes provided a representative sample of the institution. In the spring of 2013, 706 students participated in the survey and 779 participated in the spring of 2015. The total number of students for which data were recorded for the CCSSE for both study years was 1,485 participants. For the participants' responses to be connected to the EMS and IEOSS, the self-reported unique individual student identification numbers were used. Self-reported student identification numbers from the participants were matched to the IEOSS and ~~to~~ the enrollment management system, resulting in a total sample of 720 participants. It was found during this process that many of the self-reported student identification numbers were erroneous. This was a limitation of the data set used for this study. Thus, the number of participants was restricted by the use of the self-reported student identification numbers. Student identification numbers were able to be matched by the office of institutional research at A~~A~~CC for 264 study participants for the 2013 year, and 456 for the 2015 year.

Variables

All variables for this study were derived from the secondary data set. The dependent variable was faculty-student interaction. The 25 independent variables were all associated with one of the theoretical frameworks of social and cultural capital, environmental pull factors, and student effort or were demographic or academic characteristics of the student participants. All independent variables had been demonstrated by prior research to have some

relationship with either student degree completion, persistence, retention, or overall personal development. Some of the independent variables, as reported in the literature, had been studied in regard to faculty-student interaction, either at four-year universities or community colleges.

Dependent

The purpose of this study was to examine the relationship of variables for student effort, social and cultural capital, environmental pull factors and select academic student characteristics to the frequency of faculty-student interaction in the community college. The dependent variable for this study was faculty-student interaction as reported through a series of questions regarding the frequency in which students interacted with faculty in six differing circumstances. Table 3.1 lists the six questions for faculty-student interaction.

Table 3.1. CCSSE survey items for Faculty-Student Interaction, dependent variable

CCSSE Survey Question	**Response**
In your experiences at this college during the current school year, about how often have you done	
1. Used e-mail to communicate with an instructor	1=Never 2=Sometimes 3=Often 4=Very often
2. Discussed grades or assignments with an instructor	1=Never 2=Sometimes 3=Often 4=Very often
3. Talked about career plans with an instructor or advisor	1=Never 2=Sometimes 3=Often 4=Very often
4. Discussed ideas from your readings or classes with instructors outside of class	1=Never 2=Sometimes 3=Often 4=Very often
5. Received prompt feedback (written or oral) from instructors on your performance	1=Never 2=Sometimes 3=Often 4=Very often
6. Worked with instructors on activities other than coursework	1=Never 2=Sometimes 3=Often 4=Very often

For this study the six questions from the CCSSE that were used as benchmarks for faculty-student interaction served as the basis for developing a composite variable that could be used to examine the relationship with the independent variables. The six questions included: (1) used e-mail to communicate with an instructor; (2) discussed grades or assignments with an instructor; (3) talked about career plans with an instructor or advisor; (4) discussed ideas from your readings or classes with instructors outside of class; (5) received prompt feedback (written or oral) from instructors on your performance; and (6) worked with instructors on activities other than coursework. Factor analysis was used to examine the factor structure validity of the six questions for the dependent variable used in this study.

The principal factor method was used to extract the factor of faculty-student interaction. The data were not rotated because a single latent factor occurred. The KMO measure of sampling adequacy was .770 and Bartlett's test of sphericity revealed a statistical significance ($p < .001$). These results demonstrated the adequacy of conducting factor analysis.-Principle component extraction loading demonstrated relatively high correlations with values of >.50. Using the stated criteria, all six of the variables loaded on one factor with factor loadings ranging from .501 to .772. Values for factor loading are displayed in Table 3.2. The findings indicated that using all six variables as a construct for faculty-student interaction-was supported.

Cronbach's alpha was computed to assess whether data from the six variables in the factor had reliable scales. The alpha for the six-item factor construct was .770, which indicated that the items would form a scale that had good internal consistency and reliability. This, in combination with the factor load suggested that a summated or averaged (aggregated) scale, could be composed using the six questions. The factor for Faculty-

Table 3.2. EFA results for all variables of Faculty-Student Interaction

Faculty-Student Interaction	Factor Loading
Used email to communicate with instructor	.501
Discussed grades or assignment with instructor	.771
Talked about career plans with instructor	.761
Discussed ideas from readings or classes with instructor outside of class	.772
Received feedback from instructor	.601
Worked with instructor on activities other than course work	.545

Student Interaction was operationalized by creating a new composite variable that represented the average frequency of faculty-student interaction for each of the study participants. The six survey items, as expressed by the composite variable, represented the dependent variable (faculty-student interaction). The scale for each question was: 1=Never, 2=Sometimes, 3=Often, and 4=Very often. The sum of the responses to these six questions was calculated for each individual and divided by six to calculate the average. This produced a possible range of 1 to 4: 1 for a student answering 1 on all six questions to 4 for a student answering 4 on all six questions.

Summary statistics were calculated for the created composite variable for faculty-student interaction. The observations for faculty-student interaction ranged from 1.17 to 4.00, with an average of 2.38 (*SD* = 0.56). Skewness and kurtosis statistics were also calculated and are displayed in Table 3.3. When the skewness is greater than or equal to 2 or less than or equal to -2, then the variable is considered to be asymmetrical about its mean. The skewness for the composite variable of faculty-student interaction ~~is~~ was 0.51, suggesting it ~~is~~ was asymmetrical and slightly to the right of the mean. When the kurtosis is greater than or

Table 3.3. Summary statistics for the composite variable, Faculty-Student Interaction

Variable	*M*	*SD*	*n*	Min.	Max.	Skewness	Kurtosis
Faculty-Student Interaction	2.38	0.56	713	1.17	4.00	0.51	-0.13

equal to 3, then the variable's distribution is markedly different than a normal distribution in its tendency to produce outliers. The kurtosis value of -0.13 suggested normal distribution.

Independent

The following independent variables were used to answer the two descriptive research questions and the six tested research questions.

Demographic

Age was analyzed using responses to CCSSE question 29. The information was reported in ranges of 1 = under 18 years old, 2 = 18-19 years old, 3 = 20 to 21 years old, 4 = 22 to 24 years old, 5 = 25 to 29 years old, 6 = 30 to 39 years old, 7 = 40 to 49 years old, 8 = 50 to 64 years old, and 9 = 65+ years old.

Traditional and nontraditional age categories was created using the age of the student as recorded in the enrollment management system. Nontraditional students were defined as being 25 years of age or older. Traditional was defined as 24 years of age or under. All values being 24 or less were coded as 1, and all values 25 or greater were coded as 2.

Gender was analyzed using the recorded gender from the enrollment management system. Males were coded as 1 and females were coded as 2.

Race was analyzed using the racial categories as coded in the enrollment management system. The information was coded as 1 = American Indian/Native American, 2 = Asian, 3 = Black or African American, 4 = Hispanic, Latino, Spanish 5 = Mixed, Other, 6 = White. The

dichotomous variable for Race, White and Non-white was constructed by recoding 6 = White to 1, and all other racial categories to 2.

Marital status was analyzed using responses to CCSSE question 31. Are you married? Data was coded as 1 = married and 2 = not married.

Environmental pull factors

Distance of commute was analyzed using the recoded responses to IEOSS question: *How far will your commute to ACC College be from the place you will be living?* The information was coded as 1 = less than 5 miles, 2 = less than 10 miles, 3 = more than 10 miles, 4 = more than 25 miles, and 5 = more than 50 miles.

Hours worked for pay per week was analyzed using responses to CCSSE question 10b: *About how many hours in a typical week do you spend doing each of the following? (B. working for pay.)* The information was coded as; 1 = none, 2 = 1-5 hours, 3 = 6-10 hours, 4 = 11-20 hours, 5 = 21-30 hours, and 6 = more than 30 hours.

Hours spent per week caring for dependents was analyzed using responses to CCSSE question 10d: *About how many hours in a typical week do you spend doing each of the following?* (*D. Providing care for dependents living with you [parents, children, spouse, etc.]).* The information was coded as; 1 = none, 2 = 1-5 hours, 3 = 6-10 hours, 4 = 11-20 hours, 5 = 21-30 hours, and 6 = more than 30 hours.

Have children living in home was analyzed using responses to CCSSE question 28: Do you have children who live with you? Information was coded as 1 = have children, 2 do not have children.

Student effort

Student effort as reported by ~~for~~ how often participants prepared two or more drafts of a paper or assignment prior to submission was analyzed using responses to CCSSE question 4c: *In your experience at this college during the current school year, about how often have you done each of the following? (c. Prepare two or more drafts of a paper or assignment before turning it in.)* The information was coded; 1 = never, 2 = sometimes, 3 = often, and 4 = very often.

Student effort as reported by ~~for~~ how often participants came to class without completing readings or assignments was analyzed using responses to CCSSE question 4e. In your experience at this college during the current school year, about how often have you done each of the following? *(e. Come to class without completing readings or assignments.)* The information was coded; 1 = never, 2 = sometimes, 3 = often, 4 = very often.

Student effort as reported by ~~for~~ how often the participants skipped class was analyzed using responses to CCSSE question 4u: *In your experience at this college during the current school year, about how often have you done each of the following? (u. Skipped class.)* The information was coded; 1 = never, 2 = sometimes, 3 = often, and 4 = very often.

Student effort as reported by hours per week spent preparing for class was analyzed using CCSSE question 10a: *About how many hours in a typical week do you spend doing each of the following? (a. Preparing for class [studying, reading, writing, rehearsing, doing homework, or other activities related to your program]).* The information was coded as; 1 = none, 2 = 1-5 hours, 3 = 6-10 hours, 4 = 11-20 hours, 5 = 21-30 hours 6 = more than 30 hours.

Student effort as reported by frequency of use of tutoring was analyzed using CCSSE question 13d. *How often do you use the following services? (D. Peer or other tutoring.)* The information was coded as 0 = don't know, 1 =1 rarely, never, 2 = sometimes and 3 = often.

Student effort as reported by frequency of use of skills lab was analyzed using CCSSE question 13e: How often do you use the following services? (*e. Skills lab [writing, math, etc.]).* The information was coded as 0 = don't know, 1 =1 rarely, never, 2 = sometimes and 3 = often.

Social and cultural capital

Socio-economics as a measure through eligibility to receive financial assistance of a Pell grant was analyzed as recoded in the enrollment management system. The information was coded as 1 = Pell eligible, and 2 = not Pell eligible.

Study participants' access to internet at home was analyzed using the IEOSS question: *Will you have Internet access at the place you will be living while attending college?* The information was coded as 1 = have internet and 2 = no internet.

Study participants' need for assistance with the financial aid process was analyzed using the IEOSS question: *Do you need assistance with completing the FAFSA forms?* The information was coded as 1 = no help needed, and 2 = help needed.

Reported amount of perceived family support was analyzed using CCSSEE question 15: *How supportive is your immediate family of you attending this college?* The information was coded as 1 = not very, 2 = somewhat, 3 = quite a bit, and 4 = extremely.

English as the native language or not of the study participants was analyzed using CCSSE 32: *Is English your native language?* The information was coded as 1 = native English speaking, and 2 = non-native English speaking.

Study participants who were first-generation college students or non-first-generation college students were identified using CCSSE questions 36 and 37. Question 36 asked, *What is the highest level of education obtained by your mother?* Question 37 asked, *What is the highest level of education obtained by your father?* Study participants who answered 1 = not a high school graduate or 2 = high school diploma, or GED for both questions 36 and 37 were coded as 1 = first generation college. If a study participant only provided a response for one of the questions (36 or 37) and they reported a 1 or 2 they were coded as 1 = first generation college. Any study participant that reported a 3 = some college, did not complete degree, 4 = Associates degree, 5 = Bachelor's degree, 6 = Master's degree/1st professional or 7 = Doctorate degree for either question 36 or 37 were coded as 2 = not first generation college. Student participants who reported an 8 = unknown were treated as missing data.

Academic

Enrollment status was analyzed using responses to CCSSE question number 2: *Thinking about this current academic term, how would you characterize your enrollment at this college?* Responses were coded as 1 = less than full-time, and 2 = full-time.

Degree type was analyzed by using the fields from the enrollment management system for the major code of the study participant at the time of survey. The major code listed the type of degree: Associate of Arts, Associate of Science, Associate of Applied Science, and Associate of Applied Arts. Students who were enrolled in a non-transfer workforce education degree were coded as 1. Students who were enrolled in a transfer Associate of Arts or Associate of Science program were coded as 2.

GPA at time of survey for the study participants was analyzed using the reported ~~filed~~ field from the enrollment management system. The GPA at time of survey was reported as

the student cumulative grade point average at the end of the semester prior to participation in the CCSSEE survey. It was reported on a scale of 0.00 to 4.0.

Conceptual Model

A conceptual framework serves to establish and demonstrate the phenomena that the research study seeks to understand. Miles and Huberman (1994) defined a conceptual framework as a visual or written product, one that "…explains, either graphically or in narrative form, the main things to be studied—the key factors, concepts, or variables—and the presumed relationships among them" (p. 18). The conceptual framework of a study, the system of concepts, assumptions, expectations, beliefs, and theories that support and inform the research are a crucial part of research design (Miles & Huberman, 1994; Robson, 2011). Robson (2011) suggested that the conceptual framework should be developed before even the research question, establishing the fundamental constructs or the relationships to be studied and the research questions re-examined throughout the research design process.

This study used the theoretical frameworks of student engagement (Astin, 1985), social and cultural capital (Coleman, 1988), quality of effort (Pace, 1984), and environmental pull factors (Nora et al., 1996) to identify and explain the independent variables. It also used a conceptual framework and conceptual model to explain the independent variables with the dependent variable, faculty-student interaction. The conceptual model of this study followed the works of Astin (1985, 1993). The model was modified as needed to fit the variables of this study.

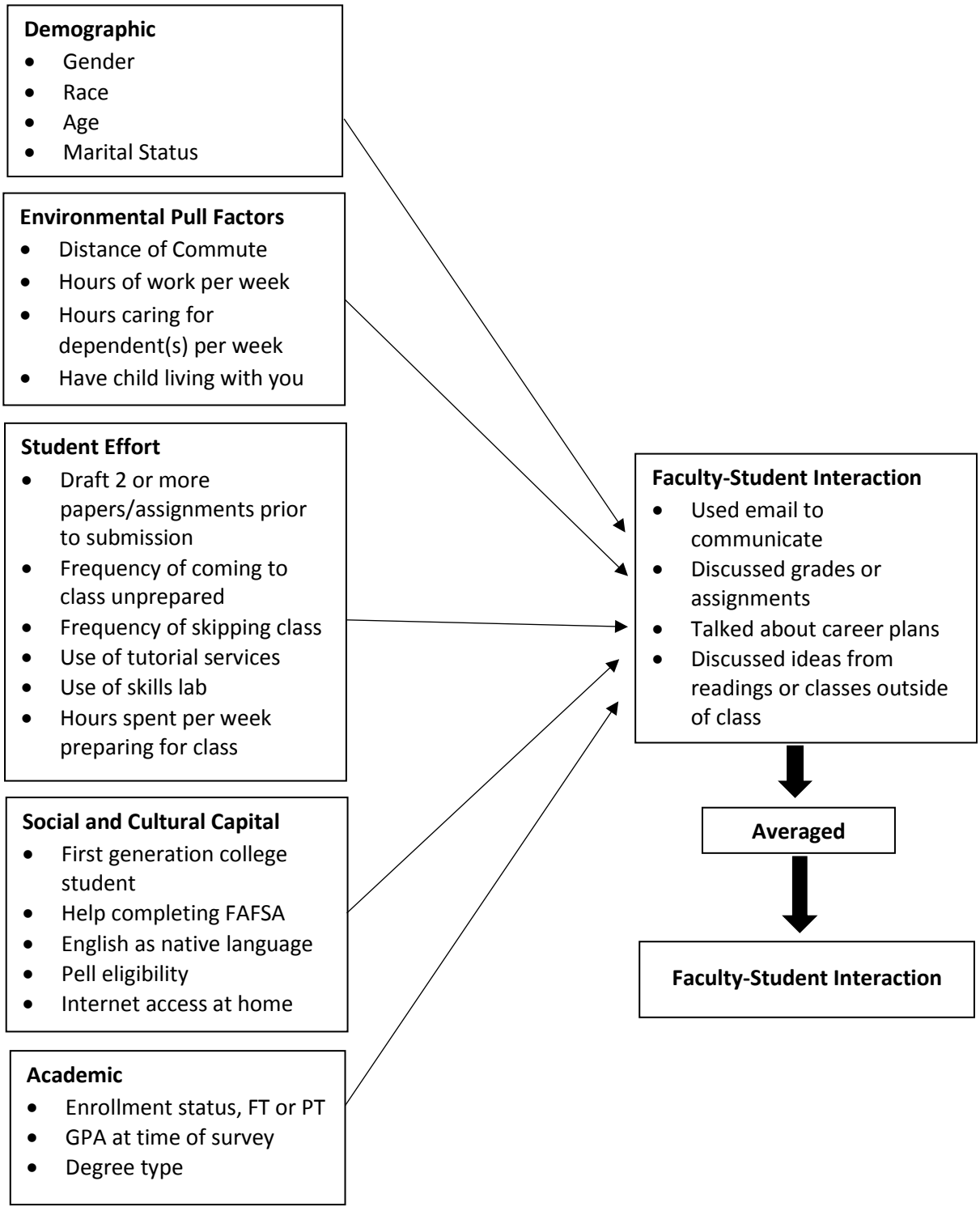
Astin's (1985, 1993) theory of student involvement directly relates to faculty-student interaction. Astin (1993) proposed an input-environment-outcome (I-E-O) model as a conceptual guide for studying engagement as it relates to college student development. In this

model, inputs describe the student's characteristics at the time of entry into the postsecondary educational institution. Environment describes the students' exposures to the college environment including such aspects as programs, policies, peers and faculty. The environment would include any aspect of the college experience a student may encounter once they have enrolled and are participating. Astin described outcomes as the student's characteristics after exposure to the environment. By comparing outcomes with input, one can draw conclusions or hypotheses about student growth or change while enrolled in college.

This study used Astin's model to develop the conceptual model for examining the relationship between the independent variables and the dependent variable faculty-student interaction. In this study, the inputs are the student characteristics as identified by the independent variables through their associated theoretical frameworks. The independent variables represent factors both external and internal to the college experience. The environment, however, remains the same as that used by Astin. It represents the experiences encountered within the community college that may either promote or impede engagement. Unlike Asitn's model, the outputs recognized for this study was the dependent variable, the frequency of faculty-student interaction. Figure 3.1 illustrates the conceptual model used in this study.

Data Analysis

The variables and data included in this study were quantitatively analyzed using IBM SPSS 24.0 software. Data analysis, including descriptive, correlation, comparative and inferential statistics, was utilized to answer the study's six tested research questions.



Source: Adapted from Astin (1985/1992): Theory of Student Involvement.

Figure 3.1. Conceptual model for frequency of faculty-student interaction in the community college

Descriptive statistical methods (frequencies) were used to examine research questions one and two. Comparative (independent samples *t*-tests, Mann-Whitney U tests, and ANOVA) and correlational (Pearson) statistical methods were used to answer research questions three through five. Inferential (sequential regression) statistics were used to explain research question number six. These techniques along with the associated variables used in this study are discussed accordingly.

Descriptive statistics

Background and demographic data were analyzed using frequencies to provide a better understanding of community college students and the study sample. Background and demographic variables examined included gender, race, age and marital status. Variables for the categories of social and cultural capital and academic factors included; Pell eligibility, enrollment status, developmental education for reading, writing, and math, educational goals, English as native language and first-generation college student. Variables for environmental pull factors included; the distance of commute, hours per week spent commuting, hours per week working for pay, hours per week caring for a dependent and if study participants had children living in their home. Based on responses to the six questions of the CCSSE that related to faculty-student interaction, the dependent variable faculty-student interaction, was descriptively analyzed to provide an in-depth analysis of the frequency that students reported interactions with faculty.

Inferential statistics

Comparative analysis. Comparative analysis was conducted to determine if statistically significant differences existed between the means of the dependent variable

faculty-student interaction and the independent variables for the categories of demographics, academics, environmental pull factors, social and cultural capital and student effort. Independent samples *t*-tests, Mann-Whitney U tests, and ANOVA were used to compare the means of 24 variables in the study based on the dependent variable, faculty-student interaction. The type of comparative analysis utilized depended upon the type of variable analyzed (nominal or ordinal).

Nominal variables in the study were analyzed using the independent samples *t*-test or the Mann-Whitney U test, based on the normality of the variable. The independent sample t-test was the appropriate test because it provides statistical differences between two unrelated groups on an approximately normally distributed dependent variable (Morgan et al., 2013). Each nominal variable was analyzed for a relationship to the dependent variable, faculty-student interaction to establish normality specific to the frequency of faculty-student interactions.

Ordinal variables in the study were analyzed using the one-way analysis of variance (ANOVA). ANOVA is appropriate when the independent variable is defined as having two or more categories, and the dependent variable is quantitative (Mertler & Vannatta, 2013; Morgan et al., 2013). Because ANOVA only determines the significance of group differences and does not identify which groups are significantly different, post hoc tests were conducted when significant differences were found to exist. Tukey's Honest Significance Difference (HSD) post hoc test was used for this study. The Tukey HSD compares each group mean to each other group mean ~~like a t-test~~ and is evaluated based on critical values for an alpha level of .05 (Urdan, 2010).

Before *t*-test or ANOVA procedures were conducted, all variables were assessed for three central assumptions. The assumptions were; "the variances of the dependent variable in the population are equal, the dependent variable is normally distributed within each population, and the data are independent" (Morgan et al., 2013, pp. 173–174). Levene's test for equality of variance was used to assess if the homogeneity of variance assumption was met (Mertler & Vanatta, 2013).

The homogeneity of variance assumption requires that the variance of the dependent variable be approximately equal in each group. A significant ($p \leq .05$) result of the Levene's test indicates that the variances of the dependent variables are significantly different and that the assumption of equal variances is markedly violated (Morgan et al., 2013; Urdan, 2010). The assumption of normality was evaluated based on the skewness of the variables. Traditionally skewness between –1 and +1 have been considered appropriate (Aron et al., 2005; Mertler & Vannatta, 2013; Morgan et al., 2013; Urdan, 2010). Variables with skewness less than –1 or greater than +1 markedly violate the assumption of normality. Variables that met the assumptions of the independent samples *t*-test were analyzed using the *t*-test and variables that markedly violated the assumptions were evaluated using the Mann-Whitney U test. Ordinal variables that met the assumptions of the independent samples t-test were analyzed using ANOVA. Ordinal variables that markedly violated the assumptions were evaluated through the use of the Kruskal-Wallis test, the non-parametric alternative for ANOVA.

The Mann-Whitney U test is a comparative analysis of the observations from one group to the observations from a second group when one group is observed to be non-parametric. The Mann-Whitney U test transforms the data into ranks and then compares the

mean rank of the data for each group. Significant differences exist between the two groups if the mean rank of one group is statistically significantly than the mean rank of the other group (Urdan, 2010). Akin to the Mann-Whitney U test, the Kruskal-Wallis H test is a rank-based nonparametric test that can be used to determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable (Urdan, 2010). The Mann-Whitney U test and the Kruskal-Wallis H tests were used when ordinal variables were found to be non-parametric.

Inferential statistics for research questions 3-7 were evaluated using either independent samples *t*-test or ANOVA as appropriate. Whenever assumptions of variance were violated, the proper non-parametric alternative was utilized. Independent samples *t*-tests were used for each of the following independent variables in this study; gender, race, traditional and non-traditional age, marital status, have children living at home, first-generation college student, assistance needed with FAFSA, English as native language, Pell eligibility, home access to internet, degree completion for 100 to 200% of time, degree type and enrollment status. Faculty-student interaction was used as the dependent variable. ANOVA analysis was conducted for the following independent variables; distance of commute, hours per week worked, hours per week caring for dependent, frequency of preparing draft papers or assignments prior to submission, frequency of skipping class, frequency of tutorial services use, frequency of skills labs use, hours spent per week preparing for class, amount of family support. Faculty-student interaction was used as the dependent variable. Tukey post hoc comparisons were conducted for all ANOVA tests found to be significant.

Correlational analysis. A Pearson correlation analysis was calculated to determine if statistically significant correlations existed between quantitative variables. The Pearson correlation coefficient (*r*) measures the association between two quantitative variables without distinction between the independent and dependent variables (Mertler & Vannatta, 2010; Urdan, 2010). The statistically significant correlations (determined at the $p < .05$ level) were analyzed based on the corresponding correlation coefficient (*r*), which indicates the direction (positive or negative) of the association between the variables. The coefficient of determination ($r2$) signified the proportion of variability from one variable to another. A positive Pearson correlation indicates that the scores of the variable move in the same direction and a negative correlation indicates that as one variable's score increases the other variable's score decreases (Mertler & Vannatta, 2010; Urdan, 2010). The relationship between faculty-student interaction and study participants GPA at the time of the survey was examined using bivariate correlation, Pearson correlation coefficient.

Regression analysis. The inferential statistical procedure used to answer the eighth research question was sequential multiple regression. Sequential multiple regression is used for examining the influence of several predictor independent variables in a specific order on the dependent variable (Mertler & Vannatta, 2013). Multiple regression is a frequently used method in research studies that analyze prediction when there are numerous quantitative independent variables and one dependent variable (Mendenhall & Sincich, 2011; Mertler & Vannatta, 2013; Nathan, Fredrick & Nimon, 2012). Sequential multiple regression was an appropriate regression model to use for this particular study because there were twenty-five independent predictor variables examined for predictability of the dependent variable, faculty-student interaction. SPSS 24.0 was used to prescreen the sample for missing data, test

assumptions related to the statistical methods, and perform the sequential linear regression procedure. All predictor independent variables must be quantitative or categorical. For a multiple regression analysis, all independent predictors should have some variation in value or a non-zero variance. For this study, the categorical variables had already been assigned a non-zero ordinal indicator if needed.

Sequential linear regression is used to analyze and compare sequential regression models in steps. Each successive step is a new regression with additional predictor variables entered into the previous regression model. Sequential linear regression compares each step by using the *F*-test to determine if the change in explained variance is significant (Mendenhall & Sincich, 2011; Mertler & Vannatta, 2013). To determine which variables have the most predictive powers sequential linear regression can be useful if there are a considerable number of predictors. Sequential linear regression is also commonly used by entering-demographic variables in the first step and introducing predictor variables in each subsequent level. The use of sequential steps will help determine the predictive power of predictor variables while controlling for the demographic variables because each of the independent variable effects is assessed at the point of entry of that given variable (Tabachnick & Fiddell, 2011). Before conducting the analysis, the assumptions of normality of residuals, homoscedasticity (equal variance) of residuals, absence of multicollinearity, and the lack of outliers were examined.

Normality refers to the distribution of the residuals; the assumption is that the residuals follow a bell-shaped curve. Normality was evaluated for each model (block of variables) using a Q-Q scatterplot. The Q-Q scatterplot compares the distribution of the residuals (the differences between observed and predicted values) with a normal distribution

(a theoretical distribution which follows a bell curve). If the points track the line, then the observed quantiles (percentage or quartiles) are close to the theoretical normal quantiles (percentage of quartile), and normality can be assumed (Tabachnick & Fiddell, 2011). The assumption of normality was met for each of the five blocks of independent variables.

Homoscedasticity refers to the relationship between the residuals and the independent variables; it is the assumption that the variability in scores for one continuous variable is roughly the same at all values for another variable (Mertler & Vannatta, 2013). Limited heteroscedasticity has little effect on significance tests; however, if marked it can lead to severe distortion of findings (Osborne & Waters, 2002). Homoscedasticity was evaluated for each model by plotting the model residuals against the predicted model values (Osborne & Walters, 2002). The assumption of homoscedasticity was met if the points appeared randomly distributed with a mean of zero and no apparent curvature. No curvature was found for any of the five-blocks used in this study.

Multicollinearity is a state of moderate to high intercorrelations or inter-associations among the independent variables (Mertler & Vannatta, 2013). Variance Inflation Factors were calculated to detect the presence of multicollinearity between predictors for each regression model. Multicollinearity occurs when a predictor variable is highly correlated with one or more other predictor variables. If a variable exhibits multicollinearity, then the regression coefficient for that variable can be unreliable and difficult to interpret. Multicollinearity also causes the regression model to have a loss in statistical power (Yoo et al., 2014). High variable inflation factors indicate increased effects of multicollinearity in the model. Variance Inflation Factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). Variance inflation factors

were calculated and reported for all independent variables in the sequential multiple regression.

A five-step sequential linear regression was conducted with faculty-student interaction as the dependent variable. For Step 1, demographic variables (gender, race, traditional or non-traditional age, and marital status) were entered as predictor variables into the null model. Variables for environmental pull factors (the distance of commute, hours per week working, hours per week caring for dependent and have children at home) were added as predictor variables into the model at Step 2. Student effort variables (frequency of rewrite draft paper/assignments, frequency of coming to class unprepared, the frequency of skipping class, hours spent preparing for class, use of tutor lab and use of skills lab) were added as predictor variables into the model at Step 3. Variables for social and cultural capital (Pell eligibility, internet access, help with FAFSA, familial support, native English or non-native English speaker and fist or not first-generation college student) were added as predictor variables into the model at Step 4. Academic variables (degree type, GPA at time of survey and enrollment status) were added as predictor variables into the model at Step 5. All predictive independent variables were loaded and tested for predictability of the dependent variable, faculty-student interaction.

Four measurements associated with multiple regression were analyzed to test the tested research question number 6 and the related hypothesis: the *F* test, *R*2 (squared multiple correlations), adjusted *R*2 (adjusted squared multiple correlations), and β (beta) (Mertler & Vannatta, 2013). The *F* test determines the extent to which the relationship between the independent and dependent variable is linear. An *F* test that is significant ($p < .05$) demonstrates that the independent variable being examined significantly predicts the

dependent variable, faculty-student interaction. The coefficient of determination, or the $R2$ statistic, is the amount of the variance in the dependent variable, faculty-student interaction that can be explained by the independent variable being examined. Adjusted $R2$, similar to $R2$, also takes the sample size and number of independent variables into account. The higher the $R2$ and the adjusted $R2$, the more influence the independent variable has on predicting the independent variable, faculty-student interaction. The standardized regression coefficient, β, shows the amount of influence each independent variable has on predicting the dependent variable (Mendenhall & Sincich, 2003, Nathan, Oswald & Nimon, 2012).

Ethical Considerations

Studies conducted using human participants must be administered within the policies established by the Institutional Review Board (IRB) (Creswell, 2009). Data collected through the CCSSE, IEOSSS and associated with the enrollment management system were collected for purposes other than this study. The data set was provided to the researcher from the study site's Office of Institutional Research with no unique identifying fields such as student identification number, birth date, email address or phone number. The secondary analysis of existing data does not require IRB review when it does not fall within the regulatory definition of research involving human subjects.

Guidance as to when research involving coded private information or specimens is or is not research involving human subjects, as defined under HHS regulations for the protection of human research subjects is provided by The Office of Human Research Protections under 45 CFR part 46. Under 45CFR part 46 a human subject is defined as a, "living individual about whom an investigator (whether professional or student) conducting research obtains data through intervention or interaction with the individual, or identifiable

private information" (U.S. Department of Health & Human Services, 2008). If a dataset has been stripped of all identifying information and there is no way it could be linked back to the subjects from whom it was originally collected (through a key to a coding system or by other means), its later use by the Principal Investigator or by another researcher would not constitute human subjects research because the data is no longer identifiable. Identifiable means the identity of the subject is known or may be readily ascertained by the investigator or associated with the information.

Based on the aforementioned specification provided by the U.S. Department of Health and Human services data used in this research did not require IRB approval or exemption. Completion of an exemption form and correspondence was submitted to Iowa State University Institutional Review Board requesting verification that the study did not require IRB. Written confirmation was provided, confirming IRB approval or exemption was not needed. Email correspondence of confirmation is presented in Appendix D.

Limitations

The data set used for this study was limited to the only two years the sample college participated in the CCSSE. It was also defined to study participants enrolled in a credit class; it did not include non-credit students. It may also lack student representation because the CCSSE was only administered during the spring semesters. Spring only data collection impacts the sample as many students who begin college during the fall do not return in the spring. Forty-five percent of community college students leave during their first year (Braxton et al. 2004). Students who only completed one semester of college after starting in the fall are not represented in the sample population.

Additionally, the dataset was limited due to the use of self-reported student identification numbers. Many of the self-reported numbers were erroneous. This severely limited the number of study participants. This limitation made the use of longitudinal data for measurements of student success problematic. It was not possible to measure scheduled credit hours completed and other milestones of student degree attainment that could be used to track student success.

Some of the limitations of the secondary dataset were previously discussed. One restriction regarding the use of the CCSSE and the IEOSS is the reliance upon self-reported data. Most researchers acknowledge that self-reported data reflect concerns about reliability and validity (Gonyea, 2005). With the expansion of the use of assessment measures in higher education research has resulted in a higher reliance on self-reported data from surveys given to students (Astin, 2003; Chun, 2002; Kuh, 2003b). Gonyea (2005) reported that generally, self-reports could be trusted as long as the survey instrument and administration process was designed with attention to the scholarship of survey research. Use of the CCSSE provides benefits in that data can readily be compared nationally or with benchmark institutions. The use of the IEOSS was limited in this study; thus, concerns were minimal.

The dependent variable was based on students' perception of faculty-student interaction and may be interpreted differently based on students' experiences and backgrounds. The CCSSE instrument is the only survey instruments designed to measure engagement specifically for community colleges, as such its use and interpretation of the data is widespread.

Another limitation of the study that relates to secondary data sets, in general. Not all of the survey questions were ~~not~~ specially designed for the research questions of this study.

Two of the variable groupings, the dependent variable faculty-student interaction, and the independent variable student effort were from the CESSE and were designed as specifically used in this study. The research questions used for the independent variable groupings of social and cultural capital and environmental pull factors were not specifically designed for that use. Their use in other research suggested, however that they were appropriate for use in this study.

CHAPTER 4. RESULTS

This chapter provides a comprehensive overview of the results of this. First, findings of the descriptive statistics of the participants are reported. They focused on demographics, social and cultural capital characteristics, select academic attributes, and environmental pull factors. Second, exploratory factor analysis and results for the development of the composite dependent variable for faculty-student interaction are provided. Third, research questions 1-5 are addressed by providing results of the comparative analysis (*t*-test, ANOVA, and correlation). Last, results from the sequential linear regression model are provided to answer research question 6, the predictability of the independent variables for faculty-student interaction.

Descriptive Statistics

Research Question 1: What are the demographic characteristics of the study participants?

To better understand the of the ACC study participants general demographics descriptive statistics for gender, race, age, and marital status are provided. Variables associated with the participants' academics and social and cultural capital are also provided, and include: enrollment status (full or pat-time), first generation college student, English as first language, self-reported developmental education status, degree aspirations as well as Pell grant eligibility, and status of degree completion. In addition, environmental pull factors are discussed for the sample, which include: have a child or dependent to care for, hours spent caring for dependent, hours spent working for pay, distance of commute to school, and average hours per week spent commuting.

The most frequently observed category of gender was male (*n*=365, 51%). The sample was near equally represented in gender with the remaining 49 % being comprised of female. Racial categories demonstrate a predominantly White sample population (*n*=591, 83%). The most frequently observed category for age was 18 to 19 years old (*n*=157, 22%) with both the categories for 20 to 21 years old (*n*=138) and 22 to 24 years old (*n*=133) being equally represented as 19%. The most frequently observed category of marital status was single (*n*=593, 83%). Frequencies and percentages are presented in Table 4.1.

Table 4.1. Demographic variables

Variable	*n*	*%*
Gender		
Female	348	49
Male	365	51
Missing	0	0
Race		
American Indian/Native American	6	1
Asian	12	2
Black or African American	86	12
Hispanic, Latino, Spanish	1	0
Mixed, Other	17	2
White	591	83
Missing	0	0
Age		
18 to 19 years old	157	22
20 to 21 years old	138	19
22 to 24 years old	133	19
25 to 29 years old	82	12
30 to 39 years old	104	15
40 to 49 years old	54	8
50 to 64 years old	42	6
65+ years old	3	0
Missing	0	0
Marital Status		
Married	120	17
Single	593	83
Missing	0	0

Variables associated with academic information and social and cultural capital background for participants are provided in Table 4.2. The participants identified themselves as predominately full-time students (*n*=610, 86%), in which slightly over half (*n*=391, 55%) were eligible to receive federal financial assistance through a Pell grant. In regard to self-identified level of developmental education for developmental reading, 70% (*n*=500) indicated that they had not nor planned to take a course while 59% (*n*=420) indicated the same for a developmental writing course, and 48% (*n*=341) for a developmental math course. When asked about degree aspirations, 73% (*n*=519) of the participants listed obtaining an associate's degree as their primary goal while 43% (*n*=338) indicated transferring to a four-year university was their primary goal. Among the participants, 47% (*n*=338) identified their primary goal was to earn a certificate. Among the participants it was determined that 68% (*n*=486) had at least one parent who had attended college. Most participants (94%; *n*=670) indicated that English was their native or first spoken language.

Table 4.2. Academic and Social and Cultural Capital characteristics

Variable	*n*	*%*
Pell Grant Eligibility		
Eligible for Pell Grant	391	55
Not eligible for Pell Grant	322	45
Missing	0	0
Enrollment Status		
Full-time	610	86
Less than full-time	103	14
Missing	0	0
Developmental Reading		
have not nor plan to	500	70
I have done	137	19
I plan to	65	9
Missing	11	2
Developmental Writing		
have not nor plan to	420	59
I have done	211	30
I plan to	72	10
Missing	10	1

Table 4.2. (Continued)

Variable	*n*	%
Developmental Math		
have not nor plan to	341	48
I have done	278	39
I plan to	77	11
Missing	17	2
Obtain Academic Certificate		
Not a goal	225	32
Secondary Goal	130	18
Primary Goal	338	47
Missing	20	3
Obtain Associate Degree		
Not a goal	84	12
Secondary Goal	93	13
Primary Goal	519	73
Missing	17	2
Transfer to 4 Year School		
Not a goal	304	43
Secondary Goal	165	23
Primary Goal	223	31
Missing	21	3
English as Native Language		
English Native Language	670	94
English Second Language	39	5
Missing	4	1
First Generation College Student		
First generation college	166	23
Non-first generation college	486	68
Missing	61	9

Environmental pull factors are those lifestyle characteristics that have been determined influence student success, especially among at risk and minority students. Sample demographics for such factors are presented here, frequencies and percentages are presented in Table 4.3. Commuting distances reported by the sample population ranged from 19% (*n*=134) for a distance greater than 25 miles to 37% (*n*=267) for a distance of less than 10 miles with 23% (*n*=164) reporting they commuted a distance between, 20 to 25 miles. Additionally, students were asked to report their number of hours per week spent commuting to and from class. The most frequently reported time spent commuting was 1-5 hours

Table 4.3. Environmental Pull factors

Variable	*n*	*%*
Distance Commuting to Class		
Less than 10 miles	267	37
Between 10 and 25 miles	164	23
More than 25 miles	134	19
Missing	148	21
Hours Spent Commuting to Class		
None	44	6
1-5 hours	440	62
6-10 hours	149	21
11-20 hours	41	6
21-30 hours	10	1
More than 30 hours	19	3
Missing	10	1
Hours Working for Pay		
None	184	26
1-5 hours	46	6
6-10 hours	48	7
11-20 hours	130	18
21-30 hours	153	21
More than 30 hours	143	20
Missing	9	1
Hours Caring for Dependent		
None	367	51
1-5 hours	71	10
6-10 hours	41	6
11-20 hours	42	6
21-30 hours	14	2
More than 30 hours	166	23
Missing	12	2
Have Children Living in Home		
No	492	69
Yes	216	30
Missing	5	1

(*n*=440, 62%). In regard to the range of reported number of hours working per week, 26% (*n*=184) indicated they did not intend to work while 21% (*n*=153) worked between 21 and 30 hours a week. Of the sample population 20% (*n*=143) reported working 30 or more hours per week. With only 30% (*n*=216) of the respondents indicating they had a dependent (child or

other) at home that they had to care for it is not surprising that we see most frequently reported category number of hours week spent caring or dependent being none (*n*=367, 51%). A total of 23% (*n*=166) indicated they spend more than 30 hours per week providing care to dependent(s).

Research Question 2: What are the frequency and types of faculty-student interaction reported by the participants?

The dependent variable for this study was faculty-student interaction as reported through a series of questions regarding the frequency in which students interact with faculty in six differing circumstances. Descriptive statistics for responses regarding the types of interactions and their associated frequencies are reported here (Table 4.4) along with a brief summary.

The most frequently reported faculty-student interaction indicated was 44% (*n*=317), in which students reported that they used emailed to communicate with an instructor very often, and an additional 35% (*n*=251) reported often. The overall frequency of interaction was lower in regard to communication surrounding grades or assignments, with only 56% reporting often or very often (very often; *n*=167, 23%; often; *n*=237, 33%). These two types of interaction represented the highest frequencies for all six questions.

Student interactions with instructors regarding discussions of career plans, ideas outside of class, performance feedback, and activities other than course work were less than those previously discussed. In regard to discussions of grades, responses were highest for sometimes (*n*=271, 38%). Similar results were also reported for discussing career plans, with sometimes being the most frequent at 42% (*n*=302), and discussing ideas from reading or classes with instructors outside of class, with somewhat being reported 43% (*n*=310). Less

Table 4.4. Faculty-Student Interaction question responses

Variable	*n*	*%*
Communicate by Email		
Never	19	3
Sometimes	122	17
Often	251	35
Very Often	317	44
Missing	4	1
Discuss Grade or Assignment		
Never	36	5
Sometimes	271	38
Often	237	33
Very Often	167	23
Missing	2	0
Talk about Career Plans		
Never	170	24
Sometimes	302	42
Often	149	21
Very Often	85	12
Missing	7	1
Discussed Ideas Outside of Class		
Never	251	35
Sometimes	310	43
Often	112	16
Very Often	33	5
Missing	7	1
Received Feedback Regarding Performance		
Never	37	5
Sometimes	229	32
Often	308	43
Very Often	137	19
Missing	2	0
Worked on Activities other than Course Work		
Never	443	62
Sometimes	178	25
Often	64	9
Very Often	19	3
Missing	9	1

frequency of interaction (*n*=64, 9% for often; *n*=19, 3% for very often) was reported for activities worked on outside of class other than course work. This type of interaction showed the least reported frequency of occurrence.

Inferential Statistics

Research Question 3 (Demographic variables)

Faculty-Student Interaction and Gender

To evaluate statistical significance for gender and faculty-student interaction, an independent samples *t*-test was conducted. Prior to the analysis, the assumption of homogeneity of variance was assessed. Levene's test for equality of variance was used to determine if the homogeneity of variance assumption was met (Mertler & Vannatta, 2013). The result of Levene's test was not significant, $F(1, 711)=0.99$, $p=.319$, indicating that the assumption of homogeneity of variance was met.

The result of the independent samples *t*-test was not significant, $t(711)=0.33$, $p=.741$, suggesting that the mean of faculty-student interaction was not significantly different between the males and female participants. Table 4.5 provides the results of the independent samples *t*-test.

Table 4.5. Independent samples *t*-test for Faculty-Student-Interaction and Gender

	Female		Male				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.39	0.57	2.37	0.55	0.33	711	.741

Faculty-Student Interaction and Race

An independent samples *t*-test was conducted to examine whether the mean of the average for faculty-student interactions was significantly different between the non-white and

White categories racial categories. Based on analysis of descriptive statistics for the variable of race, as recorded in the enrollment management system data set, the composite variable of non-white was created. This variable was created by combining all racial categories other than White to create the new category non-white. The most frequently observed category of race was White (n = 591, 83%). Frequencies and percentages are presented in Table 4.6.

Table 4.6. Composite variable for Race, White and Non-white

Variable	*n*	*%*
White and Non-white		
Non-white	122	17
White	591	83
Missing	0	0

An independent samples *t*-test was conducted to examine whether the mean of faculty- student interactions was significantly different between the racial categories of White and non-white. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The homogeneity of variance assumption requires the variance of the dependent variable be approximately equal in each group. The result of the Levene's test was significant, $F(1, 711)=4.25$, $p=.040$, indicating that the assumption of homogeneity of variance was violated. This suggests that results may not be reliable due to the nature of the sample.

The result of the independent samples *t*-test was not significant, $t(160.13)=1.73$, $p=.086$, suggesting that the mean of the variable for faculty and student interaction was not significantly different between the non-white and White categories of the variable for race. The results of the independent samples *t*-test are presented in Table 4.7.

Table 4.7. Independent samples *t*-test for White and Non-white for Faculty-Student Interaction

Variable	Non-white		White		*t*	*df*	*p*
	M	*SD*	*M*	*SD*			
Faculty-Student Interaction	2.47	0.63	2.36	0.54	1.73	160	.086

Based on the results indicating a lack of homogeneity of variance a Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in reported frequency of faculty-student interaction and between the racial categories of White and non-white. The Mann-Whitney two-sample rank-sum test is a non-parametric alternative to the independent samples *t*-test and appropriate for samples that do not exhibit the necessary distributional assumptions required of the independent samples *t*-tests (Morgan et al 2013). There were 122 observations in the non-white group and 591 in White group. The results of the Mann-Whitney *U* test (Table 4.8) were not significant, U=39069, z=-1.46, p=.143. The mean rank for group non-white group was 381.74 and the mean rank for group White was 351.89. This suggests that the distribution of the two groups was not significantly different for the reported frequency of faculty-student interaction.

Table 4.8. Mann-Whitney rank sum test for White and Non-white categories for Faculty-Student Interaction

Variable	Mean Rank		*U*	*z*	*p*
	Non-white	White			
Faculty-Student Interaction	381.74	351.89	39069.00	-1.46	.143

Faculty-Student Interaction and Traditional and Non-traditional Age Students

An independent samples *t*-test was conducted to examine whether the mean of faculty- student interaction was significantly different between the participants of non-traditional student and traditional student age categories. Nontraditional students were

defined as being 25 years of age or older. Traditional was defined as 24 years of age or under. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(1, 711)= 1.12$, $p=.291$, indicating that the assumption of homogeneity of variance was met.

The result of the independent samples *t*-test was not significant, $t(711)=0.42$, $p=.672$, suggesting that the mean of faculty-student interaction was not significantly different between participants of non-traditional student age and traditional student age categories. Table 4.9 provides the results of the independent samples *t*-test.

Table 4.9. Independent samples t-test for the difference between Faculty-Student Interaction and Non-traditional Students and Traditional Students

	Non-traditional		Traditional				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.39	0.58	2.37	0.55	0.42	711	.672

Faculty-Student Interaction for Marital Status

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different for participants who reported a marital status of married or single. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The homogeneity of variance assumption requires the variance of the dependent variable be approximately equal in each group. The result of Levene's test was not significant, $F(1, 711)=0.01$, $p=.907$, indicating that the assumption of homogeneity of variance was met. Table 4.10 presents the results of the independent samples *t*-test.

The result of the independent samples *t*-test was significant, $t(711)=-2.69$, $p=.007$, suggesting that the mean of faculty-student interaction was significantly different between

Table 4.10. Independent samples *t*-test for the difference between Faculty-Student Interaction and Marital Status

	Married		Single				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.25	0.55	2.40	0.56	-2.69	711	.007

the reported categories of married and single for marital status. The mean of faculty-student interaction for those reporting married was significantly lower than the mean of faculty-student interaction for those reporting single.

Research Question 4 (Environmental Pull Factors)

Faculty-Student Interaction and Have Children Living at Home

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different for participants who responded they had children who lived with them and those who did not have children who lived with them. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met assuring the variance of the dependent variable to be approximately equal in each group. The result of Levene's test was not significant, $F(1, 706)=2.83$, $p=.093$, indicating that the assumption of homogeneity of variance was met.

The results of the independent samples *t*-test was not significant, $t(706)=0.42$, $p=.676$ (Table 4.11). This suggests that the mean of faculty-student interaction was not significantly different between those who responded they had children living with them than those who responded they did not have children living with them.

Table 4.11. Independent samples t-test for the difference between Faculty-Student Interaction and Have Children or Not Living in Home

	No Kid		Have Kid				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.37	0.54	2.39	0.60	0.42	706	.676

Faculty-Student Interaction and Distance of Commute

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in reported faculty-student interaction and the distance reported that participants commute to school. Levene's test was conducted in order to test for homogeneity of variance. The result of Levene's test was not significant, $F(2, 562)=0.40$, $p=.672$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA test were not significant, $F(2, 562)=1.09$, $p=.336$, indicating differences in faculty-student interaction for the reported distances that students commute were similar. Results for the analysis of variance are shown in Table 4.12, and the mean and standard deviation are in Table 4.13. Since the ANOVA results indicated there were no significant effects in the model, posthoc comparisons were not conducted.

Table 4.12. ANOVA for Faculty-Student Interactions and Distance Commuted

Term	*SS*	*df*	*F*	*p*
Between Groups	0.65	2	1.09	.336
Within Groups	165.94	562		
Total	166.59	564		

Table 4.13. Means, standard deviations, and sample size for Faculty-Student Interactions by Distance Commuted

Distance of Commute	*M*	*SD*	*n*
Less than 10 miles	2.33	0.53	267
Between 10 and 25 miles	2.41	0.54	164
More than 25 miles	2.35	0.58	134

Faculty-Student Interaction and Hours Worked at Outside Job

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in the reported frequency of faculty-student interaction and the number of reported hours students intended to work at an outside job per week. Prior to the analysis, ANOVA assumptions of homogeneity were examined. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The results of the test was not significant, $F(5, 698)=1.23$ $p=.296$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA were not significant, $F(5, 698)=1.07$, $p=.375$, indicating the differences in the frequency of faculty-student interaction and the amount of hours intended to work were all similar. Results of the ANOVA are presented in Table 4.14 and the means and standard deviations are presented in Table 4.15. Due to the results showing no statically significance, posthoc comparisons were not conducted.

Table 4.14. ANOVA for Faculty-Student Interaction and Hours Worked at Outside Job

Term	*SS*	*df*	*F*	*p*
Between Groups	1.67	5	1.07	.375
Within Groups	217.15	698		
Total	218.82	703		

Table 4.15. Means, standard deviations, and sample size for Faculty-Student Interaction by Hours Worked at Outside Job

Hours Intended to Work	*M*	*SD*	*n*
None	2.33	0.55	184
1-5 hours	2.40	0.54	46
6-10 hours	2.28	0.61	48
11-20 hours	2.42	0.59	130
21-30 hours	2.39	0.52	153
More than 30 hours	2.44	0.56	143

Faculty-Student Interaction and Hours Spent Caring for Dependents

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in the reported frequency of faculty-student interaction and the reported amount of hours spent weekly caring for dependents. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(5, 695)=0.67$, $p=.595$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA were not significant, $F(5, 695)=1.94$, $p=.086$, indicating the differences in the reported average frequency for faculty-student interaction and the reported number of hours spent per week caring for dependents were similar. Results are displayed in Table 4.16, and the means and standard deviations are presented in Table 4.17. Due to the lack of statistical significance posthoc comparisons were not conducted.

Table 4.16. ANOVA for Faculty-Student Interaction and Hours Caring for Dependents

Term	*SS*	*df*	*F*	*p*
Between Groups	3.01	5	1.94	.086
Within Groups	215.63	695		
Total	218.64	700		

Table 4.17. Means, standard deviations, and sample size for Faculty-Student Interaction by Hours Caring for Dependent

Hours Caring for Dependent	*M*	*SD*	*n*
None	2.35	0.54	367
1-5 hours	2.45	0.57	71
6-10 hours	2.38	0.51	41
11-20 hours	2.59	0.55	42
21-30 hours	2.57	0.51	14
More than 30 hours	2.37	0.59	166

Research Question 5 (Student Effort)

Faculty-Student Interaction and Prepared Two or More Draft Papers/Assignments

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in faculty-student interaction and student effort as reported by the levels for how often participants prepared two or more drafts of a paper or assignment prior to submission. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(3, 703)=1.72$, $p=.161$, indicating that the assumption of homogeneity of variance was met.

The results (Table 4.18) of the ANOVA were significant, $F(3, 703)=22.53$, $p<.001$, indicating there were significant differences in faculty-student interaction and student effort as reported by the levels for how often participants reported preparing two or more drafts of a paper or assignment prior to submission. The means and standard deviations are presented in Table 4.19.

Table 4.18. ANOVA for Faculty-Student Interaction by Preparation of Draft Papers/Assignments

Term	*SS*	*df*	*F*	*p*
Between Groups	19.39	3	22.53	< .001
Within Groups	201.66	703		
Total	221.05	706		

Table 4.19. Means, standard deviations, and sample size for Faculty-Student Interaction by Preparation of Draft Papers/Assignments

Draft Papers/Assignments	*M*	*SD*	*n*
Never	2.11	0.47	107
Sometimes	2.32	0.55	231
Often	2.38	0.53	204
Very Often	2.63	0.56	165

Due to the findings of statistical significance to further examine the differences among the variables, Tukey pairwise comparisons were conducted for all significant effects. For the main effect of student effort to prepare two or more draft papers/assignments prior to submission, the mean of faculty-student interaction for Never (M=2.11, SD=0.47) was significantly smaller than for Often prepare two or more draft papers/assignments (M=2.38, SD=0.53). The mean of faculty-student interaction for never prepare two or more draft papers/assignments (M=2.11, SD=0.47) was significantly smaller than for Sometimes prepare two or more draft papers/assignments (M=2.32, SD=0.55). For the main effect of prepare two or more draft papers/assignments, the mean of faculty-student interaction for never prepare two or more draft papers/assignments (M=2.11, SD=0.47) was significantly smaller than for very often prepare two or more draft papers/assignments (M = 2.63, SD = 0.56). No other significant differences were found.

Faculty and Student Interaction and Came to Class Unprepared

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction by the frequency of coming to class without completing readings or assignments. Prior to the analysis, ANOVA assumptions were examined. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(3, 708)=.91$, $p=.438$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA as shown in Table 4.20, were not significant, F (3, 708)= 1.29, $p=.277$, indicating differences in faculty-student interaction among reported levels of coming to class unprepared were all similar. There were no significant differences of faculty-student interaction by frequencies of coming to class unprepared. Table 4.21 provides the

Table 4.20. ANOVA for Faculty-Student Interaction by Coming to Class Unprepared

Term	*SS*	*df*	*F*	*p*
Between Groups	1.20	3	1.29	.277
Within Groups	220.33	708		
Total	221.53	711		

Table 4.21. Means, standard deviations, and sample size for Faculty-Student Interaction by Coming to Class Unprepared

Coming to Class Unprepared	*M*	*SD*	*n*
Never	2.40	0.54	229
Sometimes	2.35	0.56	390
Often	2.38	0.56	66
Very Often	2.56	0.68	27

means and standard deviations. As the result indicated, there was no significant difference; therefore, posthoc comparisons were not conducted.

Faculty-Student Interactions and Skipped Class

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction by how often participants reported they skipped class during the current school year. Prior to the analysis, ANOVA assumptions were examined. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(3, 708)=0.78$, $p=.505$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA as shown in Table 4.22, were significant, $F(3, 708)= 5.50$, $p<.001$, indicating there were significant differences in faculty-student interactions Since the overall test was significant, pairwise comparisons were examined between each level of skills lab use. The results indicated significant differences between the following variable

Table 4.22. ANOVA for Faculty and Student Interactions by Skipping Class

Term	*SS*	*df*	*F*	*p*
Between Groups	5.05	3	5.50	< .001
Within Groups	216.55	708		
Total	221.60	711		

pairs: Don't know/NA-Often, don't know/NA-Sometimes, Often-Rarely/Never, and Rarely/Never-Sometimes. The means and standard deviations are presented in Table 4.23.

To further examine the differences among the variables, *t*-tests were calculated between each pair of measurements. Tukey pairwise comparisons were conducted. For the variable of skipping class, the mean of faculty-student interaction for never skip class (*M*=2.35, *SD*=0.55) was significantly smaller than for very often skip class (*M*=2.98, *SD*=0.68). For the main effect of skipping class, the mean of faculty-student interaction for sometimes skipping class (*M*=2.37, *SD*=0.55) was significantly smaller than for very often skipping class (*M*=2.98, *SD*=0.68). No other statically significant differences were found.

Table 4.23. Means, standard deviations, and sample size for Faculty-Student Interaction by Skipping Class

Skip Class	*M*	*SD*	*n*
Never	2.35	0.55	326
Sometimes	2.37	0.55	353
Often	2.57	0.61	22
Very Often	2.98	0.68	11

Faculty-Student Interaction and Frequency of Tutor Use

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction and student effort as reported by the average frequency for use of tutorial services. Prior to the analysis, ANOVA assumptions were examined. Levene's test for equality of variance was used to assess whether the homogeneity of variance

assumption was met. The result of the test was not significant, $F(3, 690)=1.41$, $p=.237$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA as shown in Table 4.24, were significant, $F(3, 690)= 20.38$, $p<.001$, indicating there were significant differences in faculty-student interaction among the levels of use of tutorial services. The means and standard deviations are presented in Table 4.25.

Table 4.24. ANOVA for Faculty-Student Interaction by Use of Tutorial Services

Term	*SS*	*df*	*F*	*p*
Between Groups	17.83	3	20.38	< .001
Within Groups	201.20	690		
Total	219.02	693		

Table 4.25. Means, standard deviations, and sample size for Faculty-Student Interaction by Use of Tutorial Services

Use of Tutor	*M*	*SD*	*n*
Don't know/NA	2.36	0.54	162
Rarely/Never	2.28	0.54	354
Sometimes	2.48	0.52	124
Often	2.87	0.61	54

Due to the significant difference among the variables, *t*-tests were calculated between each pair of measurements. Tukey pairwise comparisons were conducted. For main effect of use of tutorial services, the mean of faculty-student interaction for students who did not know ($M=2.36$, $SD=0.54$) was significantly smaller than for those who used tutorial services often ($M=2.87$, $SD=0.61$). For the main effect of use of tutorial services, the mean of faculty-student interaction for those who reported used tutorial services often ($M=2.87$, $SD=0.61$) was significantly larger than for those who rarely/never used tutorial services. ($M=2.28$, $SD=0.54$). For the main effect of use of tutorial services, the mean of faculty and student

interaction for those who often used tutorial services (*M*=2.87, *S* =0.61) was significantly larger than for sometimes used tutorial services (*M*=2.48, *SD*=0.52). For the main effect of use of tutorial services, the mean of faculty-student interaction for rarely/never used tutorial services (*M*=2.28, *SD*=0.54) was significantly smaller than for those sometimes using tutorial services (*M*=2.48, *SD*=0.52). There were no other significant differences.

Faculty-Student Interaction and Used a Skills Lab

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction and student effort as reported by the average frequency for use of skills labs (writing, math, etc.). Prior to the analysis, ANOVA assumptions were examined. The result of Levene's test was significant, $F(3, 694)=3.81$, $p=.010$, indicating that the assumption of homogeneity of variance was violated. Based on this, the results may not be reliable or generalizable. The alternative non-parametric Kruskal-Wallis text was selected.

A Kruskal-Wallis rank sum test was conducted to assess if there were significant differences in faculty-student interaction between the average frequency for use of skills labs (writing, math, etc.). The Kruskal-Wallis test is a non-parametric alternative to the one-way ANOVA and does not share the ANOVA's distributional assumptions.

The results of the Kruskal-Wallis test were significant, $\chi^2(3)=42.24$, $p <.001$, indicating that the mean rank of faculty-student interaction was significantly different between the levels of skills labs use. Table 4.26 provides the results of the Kruskal-Wallis Rank Sum Test.

Table 4.27 presents the results of the pairwise comparisons. Since the overall test was significant, pairwise comparisons were examined between each level of skills lab use. The results indicated significant differences between the following variable pairs: Don't

Table 4.26, Kruskal-Wallis Rank Sum test for Faculty-Student Interaction by Use of Skills Lab

	Mean Rank						
Variable	Don't know/NA	Often	Rarely/Never	Sometimes	X^2	*df*	*p*
FSIAVG	316.29	397.00	307.68	421.44	42.24	3	< .001

Table 4.27 Pairwise comparisons for mean ranks of Faculty-Student Interaction by Skills Lab Use

Comparison	*Observed Difference*	*Critical Difference*
Don't know/NA-Often	80.71	66.51
Don't know/NA-Rarely/Never	8.61	56.56
Don't know/NA-Sometimes	105.15	64.79
Often-Rarely/Never	89.32	55.94
Often-Sometimes	24.44	64.25
Rarely/Never-Sometimes	113.76	53.89

know/NA-Often, don't know/NA-Sometimes, Often-Rarely/Never, and Rarely/Never-Sometimes.

Faculty-Student Interaction and Hours per Week Preparing for Class

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction and student effort as reported by hours per week spent preparing for class. Prior to the analysis, ANOVA assumptions were examined. The result of Levene's test was not significant, $F(5, 694)=0.22$, $p=.955$, indicating that the assumption of homogeneity of variance was met.

The results of the ANOVA (Table 4.28) were significant, $F(5, 694)=5.52$, $p<.001$, indicating there were significant differences in faculty-student interaction among the levels of student effort reported by hours per week spent preparing for class. The means and standard deviations are presented in Table 4.29.

Table 4.28. ANOVA for Faculty-Student Interaction by Weekly Hours Spent Preparing for Class

Term	*SS*	*df*	*F*	*p*
Between Groups	8.36	5	5.52	< .001
Within Groups	210.33	694		
Total	218.69	699		

Table 4.29. Means, standard deviations, and sample size for Faculty-Student Interaction by Weekly Hours Spent Preparing for Class

Weekly Hours Spent Preparing for Class	*M*	*SD*	*n*
None	2.47	0.60	6
1-5 hours	2.34	0.58	222
6-10 hours	2.35	0.54	205
11-20 hours	2.36	0.54	167
21-30 hours	2.48	0.55	65
More than 30 hours	2.83	0.48	35

To further examine the differences among the variables Tukey pairwise comparisons were conducted for all significant findings. For the main effect of weekly hours spent preparing for class, the mean of faculty-student interaction for 11-20 hours spent per week preparing for class (*M*=2.36, *SD*=0.54) was significantly smaller than for more than 30 hours spent per week preparing for class (*M*=2.83, *SD*=0.48). The mean of faculty-student interaction for 1-5 hours per week preparing for class (*M*=2.34, *SD*=0.58) was significantly smaller than for more than 30 hours spent per week preparing for class (*M*=2.83, *SD*=0.48). While, the mean of faculty-student interaction for 21-30 hours per week spent preparing for class (*M*=2.48, *SD*=0.55) was significantly smaller than for more than 30 hours spent per week preparing for class (*M*=2.83, *SD*=0.48); and the mean of faculty-student interaction for 6-10 hours per week spent preparing for class (*M*=2.35, *SD*=0.54) was significantly smaller than for more than 30 hours spent per week preparing for class (*M*=2.83, *SD*=0.48). No other significant differences were found.

Research Question 6 (Social and Cultural Capital)

Faculty-Student Interaction and First Generation College Students

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between first-generation and non-first-generation participants. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(1, 662)=0.03$, $p=.873$, indicating that the assumption of homogeneity of variance was met.

The result (Table 4.30) of the independent samples *t*-test (Table 4.33) was not significant, $t(662)= 0.27$, $p=.788$. This suggests that the mean of faculty-student interaction was not significantly different between the first-generation and non-first-generation categories as reported by the participants.

Table 4.30. Independent samples *t*-test for the difference between Faculty-Student Interaction by First Generation College Students and Non First Generation College Students

	First Generation		Non-First Generation				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.38	0.53	2.37	0.57	0.27	662	.788

Faculty-Student Interaction and Need Assistant with FAFSA

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between the participants that indicated they need help completing the FAFSA and those that reported not needing help completing the FAFSA. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not

significant, $F(1, 561)=2.43$, $p=.120$, indicating that the assumption of homogeneity of variance was met.

The result of the independent samples *t*-test was not significant, $t(561)=-1.61$, $p=.108$, suggesting that the mean of faculty-student interaction was not significantly different between those that indicated they needed help and those that indicated they did not need help completing the FAFSA. Table 4.31 provides the results of the independent samples *t*-test

Table 4.31. Independent samples *t*-test for the difference between Faculty-Student Interactions for Students Needing Help or Not With FAFSA

	Need Help		No Help				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.28	0.48	2.37	0.56	-1.61	561	.108

Faculty-Student Interaction and English as Native and Non Native Language

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between the participants who responded they were native English speakers and those that reported as non-native English speakers. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(1, 707)= 0.00$, $p=.947$, indicating that the assumption of homogeneity of variance was met.

The result (Table 4.32) of the independent samples *t*-test (Table 4.35) was not significant, $t(707)=-1.46$, $p=.145$. This suggests that the mean of faculty-student interaction was not significantly different between the native English and non-native English speaking categories.

Table 4.32. Independent samples *t*-test for the difference between Faculty-Student Interaction for Native and Non-native English Speakers

	Native English		Non-native English				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.37	0.56	2.50	0.56	-1.46	707	.145

Faculty-Student Interaction and Pell Eligibility

An independent samples *I*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between participants that were not Pell eligible and those that were Pell eligible. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(1, 711)=1.53$, $p=.217$, indicating that the assumption of homogeneity of variance was met.

The result (Table 4.33) of the independent samples *t*-test was significant, $t(711)= 2.59$, $p = .010$, suggesting that the mean of faculty-student interaction was significantly different between the participants not eligible for Pell grant an those that were eligible. The mean of faculty-student interaction in the not Pell eligible category was significantly higher than the mean of faculty-student interactions in the Pell eligible category.

Table 4.33. Independent samples *t*-test for the difference between Faculty-Student Interaction and Pell Eligibility

	Not Pell Eligible		Pell Eligible				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.44	0.58	2.33	0.54	2.59	711	.010

Faculty-Student Interaction and Internet Access

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between the students who reported they had access to the internet at home and those who reported they did not have access to internet at home. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(1, 520)= 1.95$, $p=.163$, indicating that the assumption of homogeneity of variance was met.

The result (Table 4.34) of the independent samples *t*-test was not significant, $t(520)= 1.62$, $p=.106$. This suggests that the mean of faculty-student interaction was not significantly different between those who had internet access at home and those that did not have internet access at home.

Table 4.34. Independent samples *t*-test for the difference between Faculty-Student Interaction for those with Internet Access and those without at Home

	Access		No Access				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.36	0.54	2.17	0.47	1.62	520	.106

Faculty-Student Interaction and Family Support

An ANOVA was conducted to determine whether there were significant differences in faculty-student interaction by and reported levels of family support. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was not significant, $F(3, 697)=1.41$, $p=.238$, indicating that the assumption of homogeneity of variance was met.

The results (Table 4.35) of the ANOVA were significant, $F(3, 697)=4.45$, $p=.004$, indicating there were significant differences in faculty-student interaction among the levels of reported family support. The means and standard deviations are presented in Table 4.36.

Since statistical significance was demonstrated, *t*-tests were calculated between each pair of measurements. Tukey pairwise comparisons were conducted for all significant effects. For the main result of reported family support, the mean of faculty-student interaction for those who indicated they felt their family was extremely supportive ($M=2.42$, $SD=0.56$) was significantly larger than for those who reported their family was quite a bit supportive ($M=2.23$, $SD=0.51$). No other significant differences were found.

Table 4.35. ANOVA for Faculty-Student Interaction by Family Support

Term	*SS*	*df*	*F*	*p*
Between groups	4.06	3	4.45	.004
Within groups	212.17	697		
Total	216.23	700		

Table 4.36. Means, standard deviations, and sample size for Faculty-Student Interaction by Family Support

Family Support	*M*	*SD*	*n*
Extremely	2.42	0.56	497
Quite a bit	2.23	0.51	147
Somewhat	2.40	0.58	51
Not very	2.25	0.27	6

Research Question 7 (Academic variables)

Faculty-Student Interaction and Degree Completion

An independent samples *t*-test was conducted to examine whether the mean of faculty student interaction was significantly different between the participants who had completed a

degree or not within 200% of time to completion (eight semesters) based on date of entry and indicated an enrollment status of fulltime and not having attended another college. There were 326 participants in the study who had entered within a timeframe of 200% completion and responded their enrollment was full time and had not attended another college. Of the 326 participants, 147 observations completed an associate's degree and 179 did not complete within 200% of time since date of entry.

Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was significant, $F(1,324)=16.03$, $p<.001$, indicating that the assumption of homogeneity of variance was violated. Consequently, the results may not be reliable or generalizable. Given that the dependent variable was normally distributed and the robustness of the independent samples *t*-test a non-parametric alternative was not selected.

The result of the independent samples *t*-test was significant, $t(316.98)=-6.21$, $p<.001$, suggesting that the mean of faculty-student interaction was significantly different between participants who had completed a degree or not within 200% of time. The mean of faculty-student interaction in the complete category was significantly lower than the mean of faculty-student interaction in the not complete category. Table 4.37 provides the results of the independent samples *t*-test.

Table 4.37. Independent samples *t*-test for the difference between Faculty-Student Interaction (Complete) and Faculty-student Interaction (Not Complete)

	Complete		Not Complete				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
FSIAVG	2.44	0.30	2.69	0.43	-6.21	316	< .001

Faculty-Student Interaction and GPA

A Pearson correlation analysis was conducted between participants GPA at the time of survey and faculty-student interaction. There was a significant negative correlation between the participants GPA and faculty-student interaction (r_p=-0.26, p <.001). The correlation coefficient was -0.26, indicating a small effect size, which indicates that as the GPA at time of survey increases, faculty-student interaction tends to decrease.

Faculty-Student Interaction and Degree Type

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interaction was significantly different between participants enrolled in a Liberal Arts transfer degree or those enrolled in a workforce, career and technical education non-transfer degree. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The result of Levene's test was significant, $F(1, 711)=4.15$, p=.042, indicating that the assumption of homogeneity of variance was violated. Consequently, the results may not be reliable or generalizable. Given that the dependent variable was normally distributed and the robustness of the independent samples *t*-test a non-parametric alternative was not selected.

The result of the independent samples *t*-test was significant, $t(422.63)=5.05$, p <.001, suggesting that the mean of faculty-student interaction was significantly different between the Liberal Arts transfer degree and workforce non-transfer degree categories of degree type. The mean of faculty-student interaction in the Liberal Arts transfer degree category of degree type was significantly higher than the mean of faculty-student interaction in the workforce non-transfer degree category. Table 4.38 provides the results of the independent samples *t*-test.

Table 4.38. Independent samples *t*-test for the difference between Faculty-Student Interaction (Liberal Arts Transfer) and Faculty-Student Interaction (Workforce Non-Transfer)

	Liberal Arts Transfer		Workforce Non-transfer				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
FSIAVG	2.53	0.60	2.30	0.52	5.05	422	< .001

Faculty-Student Interaction and Enrollment Status

An independent samples *t*-test was conducted to examine whether the mean of faculty-student interactions was significantly different between the full-time and less than full-time/part-time categories of enrollment status. Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met. The homogeneity of variance assumption requires the variance of the dependent variable be approximately equal in each group. The result of Levene's test was not significant, $F(1, 711)=1.80$, $p=.180$, indicating that the assumption of homogeneity of variance was met.

The result (Table 4.39) of the independent samples *t*-test was significant, $t(711)= 2.26$, $p=.024$, suggesting that the mean of faculty-student interaction was significantly different between the full-time and less than full-time categories of enrollment status. The mean of faculty-student interaction in the full-time category of enrollment status was significantly higher than the mean of faculty-student interaction in the less than full-time category.

Table 4.39. Independent samples *t*-test for the difference between Faculty-Student Interaction Full and Less than Fulltime Students

	Full-time		Less than full-time				
Variable	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*
Faculty-Student Interaction	2.40	0.56	2.26	0.51	2.26	711	.024

Research Question 8 (Predicting Faculty-Student Interaction)

A five-step sequential linear regression was conducted with faculty-student interaction as the dependent variable. For Step 1, demographic variables (gender, race, traditional or non-traditional age, and marital status) were entered as predictor variables into the null model. Variables for environmental pull factors (distance of commute, hours per week working, hours per week caring for dependent and have children/dependent) added as predictor variables into the model at Step 2. Student effort variables (rewrite draft paper/assignments, coming to class unprepared, skipping class, hours spent preparing for class, use of tutor lab and use of skills lab) were added as predictor variables into the model at Step 3. Variables for social and cultural capital (Pell eligibility, internet access, help with FAFSA, familial support, native English or non-native English speaker and fist or not first-generation college student) were added as predictor variables into the model at Step 4. Academic variables (degree type, GPA and enrollment status) were added as predictor variables into the model at Step 5.

Prior to conducting the analysis, the assumptions of normality of residuals, homoscedasticity (equal variance) of residuals, absence of multicollinearity, and the lack of outliers were examined. Variance Inflation Factors (VIF) were calculated to check for multicollinearity, and outliers were evaluated using a Studentized residuals plot.

Variance Inflation Factors (VIFs) were calculated to detect the presence of multicollinearity between the predictors for each regression model. Multicollinearity occurs when a predictor variable is highly correlated with one or more other predictor variables. This means they essentially contain the same information, or much of the same information and therefore are measuring the same thing (Metler & Vannatta, 2013). If a variable exhibits

multicollinearity then the regression coefficient for that variable can be unreliable and difficult to interpret. Multicollinearity also causes the regression model to have a loss in statistical power (Yoo et al., 2014). High VIFs indicate increased effects of multicollinearity in the model. Variance Inflation Factors greater than 5 are cause for concern, whereas VIFs of 10 should be considered the maximum upper limit (Menard, 2009). VIFS were found to be within an acceptable range for all variable in all steps; ranging from 1.01 to 2.85. For Step 1, all predictors in the regression model have VIFs less than 10. For Step 2, all predictors in the regression model have VIFs less than 10. For Step 3, all predictors in the regression model have VIFs less than 10. For Step 4, all predictors in the regression model have VIFs less than 10. For Step 5, all predictors in the regression model have VIFs less than 10. Table 4.42 provides the VIF for each predictor in the model.

To identify influential points, Studentized residuals were calculated and the absolute values were plotted against the observation numbers using SPSS 24. An observation with a Studentized residual greater than three in absolute value has significant influence on the results of the model.

The sequential regression analysis results consist of model comparisons (Table 4.40) and a model interpretation. Each step in the sequential regression was compared to the previous step using *F*-tests.

Table 4.40. Model comparisons for variables predicting Faculty-Student Interaction

Model	R^2	R^2_{Adj}	df_{mod}	df_{res}	F	p	ΔR^2
Step 1	0.03	0.026	4	478	4.16	.003	0.03
Step 2	0.04	0.028	4	474	1.33	.257	0.01
Step 3	0.15	0.128	6	468	10.05	< .001	0.11
Step 4	0.18	0.176	6	462	2.11	.051	0.02
Step 5	0.26	0.226	3	459	18.15	< .001	0.09

Model comparisons

The *F*-test for step 1(demographic variables) was significant, $F(4, 478)=4.16$, $p=.003$, $\Delta R^2 =0.03$. This indicates that adding gender, race, traditional and non-traditional age, and marital status explained an additional 3.37% of the variation in faculty-student interaction. The *F*-test for step 2 (environmental pull factors) was not significant, $F(4, 474) =1.33$, $p=.257$, $\Delta R^2 =0.01$. This indicates that adding distance of commute to class, hours per week worked for pay, hours per week spent caring for dependent and have children living at home did not account for a significant amount of additional variation in faculty-student interaction.

The *F*-test for step 3 (student effort) was significant, $F(6, 468)=10.05$, $p<.001$, $\Delta R^2 =0.11$. This indicates that adding preparing two or more draft papers or assignments prior to submission, coming to class unprepared, skipping class, hours per week spent preparing for class, use of tutoring lab and use of skills lab explained an additional 10.91% of the variation in faculty-student interaction. The *F*-test for step 4 (social and cultural capital) was not significant, $F(6, 462)=2.11$, $p=.051$, $\Delta R^2 =0.02$. This indicates that adding Pell eligibility, internet access, assistance with FAFSA, familial support, non-native English speakers and native English speaker and first generation or not first-generation college student did not account for a significant amount of additional variation in faculty-student interaction.

The *F*-test for Step 5 (academic variables) was significant, $F(3, 459)=18.15$, $p<.001$, $\Delta R^2= 0.09$. This indicates that adding type of degree, GPA at time of survey, and enrollment status explained an additional 8.74% of the variation in faculty-student interaction. The results for the model comparisons are shown in Table 4.40. The coefficients of the model in the final step were interpreted. The results for each regression are shown in Table 4.41.

Table 4.41. Summary of sequential regression analysis for variables predicting Faculty-Student Interaction

Variable	*VIF*	*B*	*SE*	β	*t*	*p*
Step 1						
(Intercept)		1.83	0.18		10.15	< .001
Gender	1.01	-0.02	0.05	-0.02	-0.35	.726
Race	1.02	0.17	0.07	0.12	2.59	.010
Age	1.01	-0.03	0.05	-0.02	-0.54	.591
Marital Status	1.00	0.21	0.07	0.14	3.15	.002
Step 2						
(Intercept)		1.72	0.25		6.76	< .001
Gender	1.01	-0.02	0.05	-0.02	-0.44	.662
Race	1.02	0.16	0.07	0.11	2.51	.012
Age	1.05	-0.03	0.05	-0.02	-0.52	.606
Marital Status	1.30	0.22	0.08	0.15	2.93	.004
Distance Commute	1.06	0.01	0.03	0.02	0.40	.690
Hours Worked	1.08	0.03	0.01	0.09	2.02	.044
Hours Caring for Dependent	2.69	0.01	0.02	0.05	0.74	.458
Have Child/Dependent	2.66	-0.01	0.09	-0.01	-0.09	.929
Step 3						
(Intercept)		1.12	0.27		4.20	< .001
Gender	1.02	-0.02	0.05	-0.02	-0.47	.642
Race	1.05	0.12	0.06	0.08	1.84	.066
Age	1.06	-0.02	0.05	-0.02	-0.39	.700
Marital Status	1.37	0.24	0.07	0.16	3.27	.001
Distance Commute	1.07	0.03	0.03	0.04	0.96	.336
Hours Worked	1.11	0.02	0.01	0.08	1.86	.063
Hours Caring for Dependent	2.78	-0.01	0.02	-0.03	-0.49	.626
Have Child/Dependent	2.69	-0.01	0.08	-0.01	-0.08	.937
Draft Paper/Assignments	1.13	0.14	0.02	0.25	5.47	< .001
Come to Class Unprepared	1.27	0.01	0.04	0.01	0.28	.783
Skip Class	1.28	0.02	0.04	0.02	0.39	.697
Hours Week Preparing for Class	1.22	0.04	0.02	0.08	1.67	.096
Use of Tutor	1.18	0.08	0.03	0.12	2.51	.012
Use of Skills Lab	1.17	0.05	0.03	0.09	2.00	.046
Step 4						
(Intercept)		1.01	0.38		2.65	.008
Gender	1.04	-0.02	0.05	-0.02	-0.41	.685
Race	1.07	0.12	0.06	0.09	1.94	.052
Age	1.12	0.01	0.05	0.00	0.11	.912
Marital Status	1.43	0.21	0.07	0.15	2.88	.004
Distance Commute	1.09	0.02	0.03	0.03	0.75	.456
Hours Worked	1.13	0.03	0.01	0.09	1.92	.055
Hours Caring for Dependent	2.83	-0.01	0.02	-0.02	-0.34	.732
Have Child/Dependent	2.73	0.01	0.08	0.01	0.18	.861
Draft Paper/Assignments	1.15	0.14	0.02	0.25	5.44	< .001
Come to Class Unprepared	1.32	0.02	0.04	0.02	0.43	.665
Skip Class	1.32	0.01	0.04	0.01	0.19	.847
Hours Week Preparing for Class	1.25	0.04	0.02	0.08	1.68	.094

Table 4.41. (Continued)

Variable	*VIF*	*B*	*SE*	β	*t*	*p*
Use of Tutor	1.20	0.08	0.03	0.12	2.56	.011
Use of Skills Lab	1.23	0.05	0.03	0.08	1.79	.074
Pell Eligibility	1.15	0.05	0.05	0.05	1.07	.286
Internet Access	1.04	-0.03	0.04	-0.03	-0.62	.534
Help with FAFSA	1.16	-0.15	0.07	-0.11	-2.37	.018
Family Support	1.10	0.07	0.04	0.08	1.88	.061
English as Native Language	1.16	-0.00	0.13	-0.00	-0.00	.997
First Generation College	1.10	-0.02	0.06	-0.01	-0.28	.782
Step 5						
(Intercept)		0.93	0.39		2.36	.018
Gender	1.06	-0.00	0.05	-0.00	-0.11	.913
Race	1.13	0.03	0.06	0.02	0.43	.669
Age	1.15	-0.00	0.05	-0.00	-0.02	.982
Marital Status	1.45	0.26	0.07	0.17	3.63	< .001
Distance Commute	1.09	0.03	0.03	0.05	1.08	.281
Hours Worked	1.14	0.02	0.01	0.09	2.01	.045
Hours Caring for Dependent	2.85	-0.00	0.02	-0.01	-0.10	.920
Have Child/Dependent	2.75	0.00	0.08	0.00	0.06	.955
Draft Paper/Assignments	1.17	0.12	0.02	0.22	4.97	< .001
Come to Class Unprepared	1.33	0.02	0.03	0.02	0.46	.642
Skip Class	1.35	-0.02	0.04	-0.02	-0.47	.635
Hours Week Preparing for Class	1.27	0.03	0.02	0.06	1.25	.211
Use of Tutor	1.25	0.08	0.03	0.12	2.74	.006
Use of Skills Lab	1.24	0.04	0.02	0.07	1.48	.141
Pell Eligibility	1.15	0.06	0.05	0.05	1.23	.218
Internet Access	1.08	-0.07	0.04	-0.07	-1.57	.117
Help with FAFSA	1.16	-0.14	0.06	-0.10	-2.22	.027
Family Support	1.11	0.07	0.04	0.08	1.89	.059
English as Native Language	1.16	0.02	0.13	0.01	0.16	.870
First Generation College	1.10	-0.03	0.05	-0.02	-0.54	.593
Degree Type	1.06	0.19	0.05	0.16	3.89	< .001
GPA at Time of Survey	1.15	-0.10	0.02	-0.25	-5.73	< .001
Enrollment Status	1.13	0.15	0.07	0.09	2.08	.038

Model interpretations

Gender did not significantly predict faculty-student interaction, B=-0.00, t (459)= -0.11, p=.913. Based on this, a difference in male and female gender does not have a significant effect on faculty-student interaction. Race did not significantly predict faculty-student interaction, B=0.03, t(459)=0.43, p=.669. Based on this, a difference in White and non-white race does not have a significant effect on faculty-student interaction. Age did not significantly predict faculty-student interaction, B=-0.00, t(459)=-0.02, p=.982. Based on

this, a difference in traditional and non-traditional age for participants does not have a significant effect on faculty-student interaction. Marital status significantly predicted faculty-student interaction, B=0.26, t(459)=3.63, p<.001. This indicates that on average, a difference in marital status, single will increase the value of faculty-student interaction by 0.26 units over married status.

Distance of commute to class did not significantly predict faculty-student interaction, B=0.03, t(459)=1.08, p=.281. Based on this, the increments of distance commuted by the participants of the study does not have a significant effect on faculty-student interaction. Reported hours per week working at an outside job significantly predicted faculty-student interaction, B=0.02, t(459)=2.01, p=.045. This indicates that on average, an increase of incremental hours worked per week will increase the value of faculty-student interaction by 0.02 units. Hours per week caring for dependent did not significantly predict faculty-student interaction, B=-0.00, t(459)= 0.10, p=.920. Based on this, an increase in incremental hours spent caring for dependent(s) per week does not have a significant effect on faculty-student interaction. Having a child or dependent to care for did not significantly predict faculty-student interaction, B=0.00, t(459)=0.06, p=.955. Based on this sample, having a child/dependent to care for or not does not have a significant effect on faculty-student interaction.

Rewrote more than two drafts of paper or assignments prior to submission significantly predicted faculty-student interaction, B=0.12, t(459)=4.97, p <.001. This indicates that on average, the more frequently (at each reported interval) a participant indicated they did this the value of faculty-student interaction increased by 0.12 units. Coming to class unprepared did not significantly predict faculty-student interaction, B=0.02,

t(459)=0.46, *p*=.642. Based on this, a difference in the reported frequency of coming to class unprepared does not have a significant effect on faculty-student interaction. Skipping class did not significantly predict faculty-student interaction, *B*=-0.02, *t*(459)=-0.47, *p*=.635. Based on this, a difference in the reported frequency of skipping class does not have a significant effect on faculty-student interaction. Hours spent per week preparing for class did not significantly predict faculty-student interaction, *B*=0.03, *t*(459)=1.25, *p*=.211. Based on this, a difference in the number of hours per week spent preparing for class does not have a significant effect on faculty-student interaction. The frequency of use of tutorial services significantly predicted faculty-student interaction, *B*=0.08, *t*(459)=2.74, *p*=.006. This indicates that on average, with an increase in each reported level of frequency in use of tutorial services the value of faculty-student interaction increases by 0.08 units. The frequency of use of skills labs did not significantly predict faculty-student interaction, *B*=0.04, *t*(459)=1.48, *p*=.141. Based on this, as the reported frequency of use of skills lab increase it does not have a significant effect on faculty-student interaction.

Pell eligibility did not significantly predict faculty-student interaction, *B*=0.06, *t*(459) =1.23, *p*=.218. Based on this, participants being eligible or not for a Pell grant does not have a significant effect on faculty-student interaction. Having access to internet at home did not significantly predict faculty-student interaction, *B*=-0.07, *t*(459)=-1.57, *p*=.117. Based on this, having or not having internet access at home does not have a significant effect on faculty-student interaction. Requiring help completing the FAFSA significantly predicted faculty-student interaction, *B*=-0.14, *t*(459)= -2.22, *p*=.027. This indicates that on average, a participant that needed assistance completing the FASFA has a lower frequency of faculty-student interaction than those who do not need assistance by the value of 0.14 units. Level of

family support did not significantly predict faculty-student interaction, *B*=0.07, *t*(459)=1.89, *p*=.059. Based on this, the difference for the reported levels of family support does not have a significant effect on faculty-student interaction. English as native language did not significantly predict faculty-student interaction, *B*=0.02, *t*(459)=0.16, *p*=.870. Based on this, reporting as a native English speaker or a non-native English speaker does not have a significant effect on faculty-student interaction. First generation college student did not significantly predict faculty-student interaction, *B*=-0.03, *t*(459)=-0.54, *p*=.593. Based on this sample, reporting as a first-generation college student or not does not have a significant effect on faculty-student interaction.

Type of degree significantly predicted faculty-student interaction, *B*= 0.19, *t*(459) = 3.89, *p*<.001. This indicates that on average, participants who majored in a Liberal Arts transfer degree had a greater frequency of faculty-student interaction by 0.19 units than individuals enrolled in a workforce non-transfer degree. Participants' GPA at the time of survey significantly predicted faculty-student interaction, *B*=-0.10, *t*(459)=-5.73, *p*<.001. This indicates that on average, a one-unit increase in GPA will decrease the value of faculty-student interaction by 0.10 units. Enrollment status significantly predicted faculty-student interaction, *B*=0.15, *t*(459)=2.08, *p*=.038. This indicates that on average, participants reporting enrolled as fulltime status will have a value of faculty-student interaction 0.15 units more than participants indicating a less than full-time enrollment status.

CHAPTER 5. DISCUSSION, CONCLUSIONS, AND IMPLICATIONS

Summary of the Study

For the United States to be competitive globally, it must increase the number of students who complete a certificate or degree. These credentials to be conferred must align with higher-value-added labor market skill demand. Unfortunately, the revolving door of the community college suggests that its current practices are ill-equipped to offer the necessary academic support, policies, practices and even content needed to meet the challenge. Community colleges continue to struggle with suitable educational offerings to meet the varied needs of the diverse learners they serve, it has become evident that new ways must be created to work with students, faculty, and administrators as well as community business and industry to increase student success and bolster degree attainment.

The completion agenda is merely the sounding of the alarm; it is not the answer to how community colleges address the changes needed to increase the overall effectiveness of their mission. Initiatives such as ATD, CCSSE and the VFA are avenues to provide insight into what must take place and serve as a catalyst for changes as well as clearing houses for the sharing of best practices. Many colleges are doing valuable work in identifying changes that need to be made, but most often not at the scale required for substantive change. Each institution must do its part.

At the heart of this initiative is the model of quality learning. Moreover, by quality learning is the relationship between faculty and student. If substantive changes are to be made in community colleges, faculty will need to play a key role in carrying out such changes. “Faculty are the only truly compulsory element of higher education. A student taking a course must, in some way, interact with the faculty member leading the course, even

it is to only listen" (Kolb, 2015, p. 95). It is essential that a better understanding of faculty-student interaction be established by increasing knowledge of the factors that may, or may not influence faculty-student interaction. By focusing on quality learning, the answers to the questions for what changes need to be made and how best to implement them will be revealed.

The overall purpose of this study was to examine the relationship of the variables for environmental pull factors, student effort, social and cultural capital and academics to the frequency of faculty-student interaction in the community college. A review of the literature indicated limited studies have addressed this fundamental relationship of learning in the community college setting. Most studies of faculty-student interaction have focused on four-year universities. Findings from these studies have suggested a positive relationship between faculty and students has resulted in a broad range of student educational outcomes, including degree attainment (e.g., Astin 1977, 1993; Cabrera et al. 2001; Campbell & Campbell 1997; Endo & Harpel 1982; Ishiyama 2002; Kuh 1995; Kuh & Hu 2001; Lamport 1993; Pascarella 1980, 1985; Pascarella & Terenzini 1976; Strauss & Terenzini 2007; Terenzini et al., 1999; Thompson 2001; Volkwein et al., 1986). In general, the research has revealed that increased contact between faculty and students, both in and out of the classroom, increases students' overall personal development and gains in learning outcomes such as degree attainment.

Unlike their four-year counterparts, community college students face a unique set of challenges when it comes to accessing faculty. Community college students are more likely to enroll on a part-time basis, be from families of lower income and represent greater ethnic diversity (Provasnik & Planty 2008). There is also a higher percentage of students who commute (Cohen & Brawer, 2003), and are more likely to have obligations in addition to

their studies such as care of dependents (Berkner & Choy, 2008) and work either part-time or full-time jobs (Provasnik & Planty, 2008). These are factors that make achieving academic success and interacting with faculty a more significant challenge for this population.

Faculty-student interaction research regarding community colleges is limited. The few studies about this population have revealed that engaging community college students through faculty-student interaction can lead to improved student outcomes, including persistence (Cejda & Rhodes, 2004; Chang, 2005; Hagedorn et al., 2000; Hagedorn, Perrakis & Maxwell, 2002; Thompson, 2001; Trautmann & Boes, 2000; Wilmer, 2009; Wirt & Yeager, 2014). Among these studies, only one has focused on variables that may predict faculty-student interaction in the community college (Wirt & Yeager 2014). While the limited body of research has validated the importance of the role of faculty-student interaction in the community college, it is still limited in explaining factors that may influence faculty-student interaction. A review of the literature led to six research questions that guided this study:

1. What are the demographic characteristics of the study participants?
2. What are the frequency and types of faculty-student interaction reported by the participants?
3. What relationship, if any, exists between the frequency of faculty-student interactions and demographic variables (gender, race, age, and marital status)?
4. What relationship, if any, exists between the frequency of faculty-student interaction and student experiences with environmental pull factors (hours worked per week, distance commuting to and from class, having child/dependent living in home, hours spent caring for dependent)?

5. What relationship, if any, exists between the frequency of faculty-student interaction and student effort (preparing two or more draft papers or assignments prior to submission, hours per week preparing for class, coming to class unprepared, skipping class, tutor and skills lab use)?
6. What relationship, if any, exists between the frequency of faculty-student interaction and social and cultural capital (first generation and non-first-generation college students, native English speakers and non-native English speakers, need of assistance completing the FAFSA, and Pell eligibility)?
7. What relationship, if any, exists between the frequency of faculty-student interaction and academic variables (GPA at time of survey, full-time or less than fulltime enrollment status, degree type, degree completion in 200% of time)?
8. To what extent can the frequency of faculty-student interaction be predicted by environmental pull factors, student effort, social and cultural capital and academic variables?

This chapter discusses the results of the analyses using the three unique secondary data sets from ACC. This novel approach to the use of secondary data sets may serve as a model of how large-scale, national research studies and local institutional based student information collection practices can be merged with institutional enrollment management systems to yield unique secondary data sets comprised of self-reported, non-self-reported and longitudinal student information. The use of this type of secondary data at the institutional level could produces results for identifying needed changes, their implementation, and evaluation of the change's effectiveness. Similarly, the sharing of research drawn from such unique institutional data sets can provide further insight into the complexities of the

community college environment and the myriad of factors influencing student degree attainment. This chapter also includes recommendations for policy and practice as well as suggestions for future research and closes with conclusions of the study.

Findings

This section provides a review of the findings of the descriptive research questions (frequencies) as well as the tested research questions (independent samples t-test, ANOVA, correlation and sequential linear regression). The data were quantitatively analyzed using SPSS 24.0 software.

Research Question 1 (Demographic variables)

The results of the descriptive analysis were calculated using frequency statistics. The descriptive analysis included all participants in the secondary dataset who took the CCSR during the spring semesters of 2013 and 2015 and for which a student ID number that could be linked back to the IEOSS survey and the EMS.

The participants were 51% male and 49% female. 22% of the participants self-reported they were in the age range of 18 to 19 years old and the age groups of 20 to 21 years of age and 22 to 24 years old were both self-reported at 19% each. The average age of the participants, based on information from the enrollment management system, was 26.85 with the minimum recorded age of 17 and a maximum of 69 years old. Using the criteria of traditional college student grouping as 24 years of age or under the participants were 61% traditional and 39% non-traditional. Among the participants, 83% identified themselves as White race upon entering ACC. The second largest reported racial category is Black or African American at 12%, with 2% reported as Asian and 2% as other.

The American Association of Community Colleges (2017) reported that, nationally, 56% of credit-seeking students enrolled in community colleges are female. Based on this finding, it can be concluded that the study sample had more male participants than the national average. The study participants were also slightly younger than the average community college student across the United States reported at 28 years of age. The study participants also differed in diversity from the typical composition of community college students. Approximately half (48%) of community college students in the U.S. are white, with the next most represented group being Hispanic at 23%, and Black or African American at 13% (AACC, 2017). The representation of African American students for study participants was close to half of the national average. There was an almost non-existent number of Hispanics (*n*=1) compared to the reported national averages. Given these differences in gender, age and race, inferences made from demographic variables must be considered at only the institutional or perhaps, at best, regional level.

Regarding marital status, slightly less than one fifth (17%) of the participants indicated a status of married, with the remaining 83% being single. There are limited sources that reference the frequency of marital status among community college students in the U.S. Data reported by CCSSE for participants of the 2015 cohort survey indicated that 17.7% (*N*=432,913) of the respondents indicated a status of married. The 2012 cohort reported that 21.6% (*N*=452,191) responded they were married. The results of the study participants were similar regarding marital status to other community colleges across the nation.

Among the study participants, approximately 30% (*n*=216) indicated they had a child or children living in their household, which is similar to the stated range for community college students in the U.S. A current review of the literature reported on two different

variables related community college students with dependent children. An Institute for Women's Policy Research (IWPR) analysis of data from the U.S. Department of Education, National Center of Education Statistics finding suggested that approximately 2.1 million student parents attend 2-year institutions, representing 30% of the entire community college student body (Gault et al., 2014). The AACC (2017) reported that 17% of community college students were single parents. Results of a cross-tabulation of the study participants for the variables of marital status and have children living at home revealed that 19% of the participants who indicated they had children who lived with them were single. This figure is similar to the value reported by AACC for all community college students.

Regarding the number of hours per week reported caring for dependents, half (51%) of the participants spent none. This is likely a reflection of the number of participants who reported they did not have children living at home. Slightly less than one fourth (23%) of the participants indicated they spent more than 30 hours per week caring for dependents. The remaining participants reported spending anywhere from 1 to 20 hours per week. These responses suggested that caring for dependents impacted a small percentage of the participants (23%); however, it does consume a considerable amount of hours per week. These findings lend support to those reported that college students with children are unlikely to complete a certificate or degree within six years of enrollment. Only 33 % of single parents attain a degree or certificate within that same time frame due to the substantial time constraints of dependent care (IPWR, 2014). According to one study, "…one-third (33.7 percent) of low-income single women with children and slightly more than one quarter (28.8 percent) of low-income married women with children take more than 10 years to complete a

bachelor's degree; compared to 15.6 percent of all women, 16.5 percent of all low-income women, and 12.7 percent of all men" (CWPS, 2010).

Regarding community colleges, Goldrick-Rab and Sorensen (2010) reported that unmarried parenting students are more than three times likely than average to be enrolled in short-term vocational postsecondary programs, which are much less likely to conclude with a college degree. Given the influence caring for dependents has been shown to have on college completion, it may also influence the frequency that faculty-student interaction occurs in the community college.

Community college students may also differ from four-year university students regarding employment and commuting to class. Among the study participants, 62% indicated they commuted 1 to 5 hours per week to and from class, and 21% reported 6 to 10 hours per week. When asked about the distance of their daily commute, 37% responded they commuted less than 10 miles, 23% reported between 10 and 25 miles and 19% more than 25 miles. Since ACC is a non-residential commuter campus, only 6% indicated they spent no time commuting to class. This low percentage is reflective of those students living in a privately-owned apartment complex within walking distance to campus.

Working while attending college seems to be the typical practice for the students attending community colleges. Among the study participants, approximately one fourth (26%) did not spend any time working during the school year; while 21% reported working between 21 and 30 hours, and 20% indicated they worked more than 30 hours per week. These hours are similar to those reported by AACC for community college students. The AACC (2017) reported that 41% of part-time students worked a fulltime job and 40% of full-time students were employed part-time. An additional 22% of community college students

attending full-time had a part-time job, and 32% of part-time students had a part-time job. The participants in the study sample appeared to be within the reported range for all community college students. Studies have revealed that the negative influences of work can result in lower levels of perceived gains in personal and social development for community college students (Ethington & Horn, 2007). One study reported that employment over 20 hours per week negatively impacted persistence (Bean & Metzner, 1985). Miller, Danner, and Staten (2008) condluded that university students who work long hours were less engaged in campus activities, had lower GPAs, and were less likely to interact with faculty. The hours reported by the study participants were similar to those reported for other community college students at the national level. Given this finding, it is possible that the struggles of work also interfered with faculty-student interaction.

Frequencies for variables associated with social and cultural capital for the study participants revealed that more than half (55%) of the study participants were qualified to receive federal financial aid in the form of Pell grants. Only 5% (*n*=39) of the participants self-reported English being their second language and 23% (*n*=166) as being first-generation college students based on mother's and father's highest level of education.

According to the AACC (2017), 36% of all students attending community colleges are first-generation college students. This number is higher than that of the study participants. Nearly two fifths of community college students (38%) received federal financial aid in the form of grants (Juszkiewicz, 2014). The study participants have a higher rate of Pell eligibility than the national average; however, differences in the figures could be due to eligibility versus actually being a Pell recipient. Given the limited diversity exhibited in the racial demographics, it is not surprising to see a low number of non-native English speakers

represented by the study participants. The NCES Beginning Postsecondary Students Longitudinal Study of 2003-2009, which covered entering students of all ages, excluding international students in the U.S. on visas, found that 12% of entering students at two-year colleges were non-native English speakers. This figure is slightly more than twice that reported by the study participants. These characteristics for social and cultural- capital indicate that the study participants differ from the national average for all community college students regarding socioeconomic factors.

The majority (86%) of the participants in the study were attending fulltime when asked about their enrollment status. This is much higher than the national average reported by AACC at 38% (2017). It is possible that the younger age of the study participants may be a contributing factor to the unusually large number of fulltime, enrolled students. The higher number of fulltime students was found to be a unique characteristic of the study participants and should be taken into account when making generalizations to the larger community college student population.

Concerning degree aspirations, approximately three fourths (73%) of the participants indicated their primary goal was to obtain an associate's degree, with 31% indicating their primary goal was to transfer to a four-year university. Less than half (43%) indicated transferring to a four-year university was not a goal. Among the study participants, slightly less than half (47%) reported that obtaining an academic certificate was a primary goal, whereas 32% indicated it was not a goal at all. These findings were similar to reports in the literature. Bradburn and Hurst (2001) found that 71% of public 2-year college students expected to complete a bachelor's degree or higher. Laanan (2003) reported that about 40% of public and 37% of private two-year college students indicated that they aspired to obtain

an associate's degree. Based on the descriptive statistics, the degree and transfer aspirations were found to be similar to those reported in the literature for community college students.

In summary, the demographics of the study participants were fairly typical of community colleges as a whole, with the exception of fulltime and part-time enrollment status and racial diversity. The following differences also existed: (a) the participants were less represented by first-generation college students and non-native English speakers than reported for most community college students; and (b) the average age of the sample was approximately one year younger, with more males represented than are typically seen in the community college population.

Research Question 2 (Faculty-Student Interaction)

The dependent variable in this study was faculty-student interaction. It can also be reversed to indicate student-faculty interaction. Both faculty and students must take responsibility for interaction. This researcher did not seek to provide a conclusion to the value of faculty-student interaction but, instead, operated from the assumption, as demonstrated by the literature, that faculty-student interaction has positive outcomes at both four-year universities and two-year community colleges. This study did not differentiate in the various types of faculty-student interaction and associated quality that may be attached to the varying types of faculty-student interaction. All interactions were considered to be of equal value in this study.

The frequency of faculty-student interaction was determined based on the study participants' responses to questions in the CCSR as previously discussed in Chapter 3 and 4. The most frequent form of faculty-student interaction reported by the respondents was communication through email, with a majority (79%) of the study participants indicating

they used it very often or often. The next most frequently reported faculty-student interaction was receiving feedback regarding performance for which slightly more than three fifths (62%) of the participants indicated often or very often. The next highest reported frequencies of faculty-student interaction was discussed a grade or assignment with an instructor, for which more than half (56%) of the participants reported often or very often. Responses to these three questions represented the highest frequencies of faculty-student interactions for all six questions. All other responses to questions suggested limited faculty-student interaction.

The three questions reported with the least frequency of faculty-student interaction were: (a) talk about career plans with an instructor or advisor, (b) discussed ideas from readings or classes with the instructor outside of class, and (c) worked with instructors on activities other than coursework. Two thirds (66%) of the participants reported they never or sometimes talked about career plans with an instructor, while a majority (78%) reported never or sometimes discussed ideas with an instructor outside of class, and even a greater percentage (87%) reported never or sometimes worked with an instructor on activities other than coursework.

Table 5.1 provides a comparison of the study participants' responses to the six questions regarding faculty-student interaction with the 2013 and 2015 benchmark frequencies provided by CCSSE (2017). The comparison suggests a very similar frequency of reported faculty-student interaction for the study participants to that of community colleges across the nation. The ACC participants reported a 10% greater frequency in communication by email very often. Besides this difference, the overall trend for types of communication is similar in all three groups. The frequency for email and classroom-related

Table 5.1. Comparison of responses to CCSSE Faculty-Student interaction questions between study sample and CCSSE 2013 and 2015 data

Variable	*ACC Study n*	*ACC Study %*	*2013 CCSSE n*	*2013 CSSE %*	*2015 CCSSE n*	*2015 CCSSE %*
Communicate by Email						
Never	19	3	34,889	7.7	28,100	6.4
Sometimes	122	18	136,714	30.1	124,102	28.4
Often	251	35	145,201	31.9	140,581	32.1
Very Often	317	44	137,989	30.0	144,853	33.1
Total	709	100.0	454,792	100.0	437,637	100.0
Discuss Grade or Assignment						
Never	36	5	38,809	8.5	37,627	8.6
Sometimes	271	38	188,482	41.4	175,361	40.0
Often	237	33	143,122	31.4	137,561	31.3
Very Often	167	23	84,926	18.7	88,154	20.1
Total	711	100.0	455,338	100.0	438,298	100.0
Talk about Career Plans						
Never	170	24	126,058	27.7	114,610	26.2
Sometimes	302	42	200,157	44.1	189,320	43.3
Often	149	21	86,110	19.0	87,184	19.9
Very Often	85	12	42,005	9.2	46,396	10.6
Total	706	100.0	454,331	100.0	437,510	100.0
Discussed Ideas Outside of Class						
Never	251	36	203,955	45.0	192,794	44.1
Sometimes	310	43	170,031	37.5	161,919	37.1
Often	112	16	56,087	12.4	56,694	13.0
Very Often	33	5	23,478	5.2	25,273	5.8
Total	706	100.0	453,551	100.0	436,681	100.0
Received Feedback Regarding Performance						
Never	37	5	33,771	7.4	30,983	7.1
Sometimes	229	32	153,656	33.8	142,689	32.6
Often	308	43	177,314	39.0	171,082	39.1
Very Often	137	19	89,663	19.7	92,852	21.2
Total	711	100.0	454,405	100.0	437,605	100.0
Worked on Activities other than Course Work						
Never	443	63	309,101	68.5	288,331	66.5
Sometimes	178	25	95,999	21.3	96,634	22.3
Often	64	9	32,963	7.3	34,604	8.0
Very Often	19	3	12,968	2.9	14,329	3.3
Total	704	100.0	451,032	100.0	433,898	100.0

items, such as discussion of grades or feedback on assignments, is much higher than other items, such as talking about career plans, discussing ideas outside or class or working on non-course related activities. These data indicate that the study participants are similar in frequency of faculty-student interaction to the nationally reported frequencies.

Further research is needed to determine the quality and levels of effort associated with the types of faculty-student interaction recorded by the CCSR. The highest reported frequency was email communication both in this sample and nationally. It is not possible to ascertain the quality of this type of interaction and the impact it has on students because the nature of the content of the emails is unknown. The finding indicates that, currently, digital communication is the most prevalent method by which faculty-student interaction takes place in the community college context. The characteristics of the community college students' lifestyle and minimal time spent on campus near faculty may account for this finding. All other forms of out-of-class, faculty-student interaction had a low frequency of occurrence. Discussions and feedback regarding grades and assignments occurred with a high frequency. Overall, the frequencies are much higher for those interactions that involve course-related content or relate to classroom instruction in comparison to interactions that do not. A low frequency of faculty-student interaction regarding a non-course related context appears to be a trend in faculty-student interaction as expressed by the study participants and the national data.

The findings of this study for the frequency of faculty-student interaction were consistent with those reported from other research. Most faculty-student interaction occurs either in or directly related to the classroom dealing with items such as coursework, discussions or questions surrounding an assignment or grade with very little interaction

taking place that involved personal problems or social communications (Cotton & Wilson, 2006; Kuh & Hu, 2001). More research is needed to understand if out of classroom faculty-student interaction is beneficial to community college student success as has been demonstrated at four-year universities for both undergraduate and graduate students.

Research Question 3 (Faculty-Student Interaction and demographic variables)

Independent samples *t*-tests were conducted comparing the averages of faculty-student interactions for the selected demographic variables. The mean of faculty-student interaction was not significantly different between the male and female participants, nor was it found to be significantly different for White and non-white racial categories. There was also no significant difference between the age groupings of traditional and non-traditional college students, indicating there are limited differences in the frequency of faculty-student interaction for gender, race and age for the study participants.

The result of the independent samples *t*-test was significant, (p=.007) for the mean of faculty-student interaction between the reported categories of married and single for marital status. Participants of the study that reported being single had a significantly higher mean frequency of faculty-student interaction than those who were married. The wording of the question for marital status provided only options for married or single, no option for cohabitation. It is possible this may have influenced the results.

Previous research regarding students and marital status has provided mixed results. NCES (2005) reported that whether students are married or have dependents is not related to their likelihood of completing educational credentials. Bozick and DeLuca's (2005) study of traditional-age students, in contrast, revealed that getting married and having children before or during enrollment in college had negative consequences regarding degree attainment.

Jacobs and King (2002) found that married women were significantly more likely than unmarried women to complete a degree. Spouses may provide support by paying for college expenses and taking on a larger share of housework so that their student-spouses can focus more on studying. Taniguchi and Kaufman (2005) reported that married nontraditional students were no different from their never-married counterparts in regard to degree completion; yet when compared to divorce, marriage promotes degree completion. They concluded further that marriage seems to offer only a limited support system in pursuing educational goals for adult students and, when a marital union breaks up, individuals face significant difficulties in educational attainment, presumably due to the loss of material, time, and emotional resources.

Another factor to consider is that cultural changes in the institution of marriage impacts the way the question is perceived and answered. Individuals in their late teens and early 20s, what Arnett (2004) has termed "emerging adults" are particularly likely to engage in more transitional forms of behaviors such as cohabitation. If incongruity between marriage and degree attainment is due to time and financial constraints, these similar constraints are likely to be expressed in cohabitating relationships. It is for this reason any discussion of degree completion or faculty-student interaction and marriage must consider the inclusion of non-marital union. The role of cohabitation is essential because of its recent and rapid prevalence. The United States has witnessed a massive decline in marriage, particularly among millennials ranging from 18 to 29 years of age (Taylor, 2015). This is the precise age of most community college students. Results from studies that have considered marriage and cohabitation have indicated both to be similarly related to degree completion. For students

who delay entry and those who enter college on time, marriage/cohabitation was not found to be significantly different regarding degree completion (Taniguchi & Kaufman, 2005). The results of this study suggested that the participants of the study who indicated a marital status of single had a higher mean frequency of faculty-student interaction than those who were married. Given the shifting cultural practices of cohabitation and the overall declining rates of marriage, it is probable that the results present bias due to the nature of the question. Future research needs to consider better measures of factors associated with the traditional values of marriage as culturally viewed in contemporary society to better understand its influence on both degree attainment and faculty-student interaction.

Research Question 4 (Environmental Pull Factors)

Independent samples *t*-test or ANOVA were conducted comparing the mean average of faculty-student interaction for the environmental pull factors variables. The mean of faculty-student interaction was not significantly different between participants who reported they had children who lived with them and those who do not have children who lived with them. Similar results for the ANOVA tests for the distance of commute; hours spent working for pay and hours spent caring for a dependent indicated that the mean of faculty-student interaction was not significantly different for any variables of environmental pull factors.

Astin (1993) revealed that the most prominent adverse effect of working fulltime was the completion of a bachelor's degree. Miller, Dannner, and Staten (2008) noted that students working long hours were less likely to interact with faculty. Results of this study revealed there was no significant difference in the frequency of faculty-student interaction for those who worked long hours and those who did not. This finding indicated that community college students may have adaptive strategies for faculty-student interactions that mitigate

the pull factors associated with outside work. The lack of significance could be attributed to the importance of the relationship as perceived by the students who consciously make an effort to interact with faculty.

External factors related to home have also been shown to influence student persistence (Nora, 2003). The factors that pull the student away from their academic endeavors, such as time spent commuting or caring for a dependent, have been demonstrated to have an adverse influence on student success. The results of this study indicated that environmental pull factors do not influence the mean frequency of faculty-student interaction. It is likely that, while these factors may have an overall impact on the success of community college students, these students can prioritize their interaction with faculty. Sorey and Duggan (2008) noted that the demands of child-rearing could serve as a barrier to college persistence. The current study demonstrated that the demands of child-rearing are not a factor that influenced the mean frequency of faculty-student interaction.

Results regarding environmental pull factors suggest that the interactions, as reported in this study, do not interfere because the interaction is conducted primarily through time-effective methods such as email or during class time. The frequency of faculty-student interactions in this study was highest for those items related to classroom activities such grades and assignments. The limited frequency expressed by the sample for out of class and non-class related activities suggested further research is needed to fully understand the impact of environmental pull factors and the varying types of faculty-student interaction.

Research Question 5 (Student Effort)

ANOVA tests were conducted for the series of questions from the CCSR that measured student effort. The results indicated that the mean frequency of faculty-student

interaction was significantly different for all student effort variables except one—how often students came to class unprepared. The significant results for how often participants reported preparing two or more drafts of paper or assignment before submission indicated that, as the frequency of draft preparation increases, so does the mean frequency of faculty-student interaction. These results were the same as those seen for the amount of hours spent per week preparing for class, frequency reported for the use of tutorial services and frequency of reported use for skills lab. As the reported hours of preparation or frequency of use increased, so did the mean frequency of faculty-student interaction, suggesting that as students put forth a more considerable effort, an increase in the mean frequency at which interaction with faculty also occurs.

The results of the ANOVA revealed a significant difference ($p < .001$) in the mean frequency for faculty-student interaction among the levels of skipping class. As the reported frequency of skipping class increased so did the mean frequency of faculty-student interaction, suggesting that the more frequently a student skipped class, the more frequently they interacted with faculty, on average. While this may seem counter to the results of other variables for student effort, it can be explained by those who are not skipping class did not need to interact with faculty at a higher frequency to compensate for absenteeism. It is likely that this interaction was due to some students informing faculty of their absence as well as preparing to make up any classroom work. In some instances, this may also be due to the classroom policy of the faculty member.

In contrast to environmental pull variables, results of this study indicated that the relationship of student effort variables was of greater significance for faculty-student interaction. Except for coming to class unprepared and skipping class, all variables for

student effort revealed a relationship which indicated, as the frequency or amount of effort increased, so did the mean average of faculty-student interaction. This significant finding suggested that the close relationship between student effort and faculty-student interaction has implications for strategies to increase faculty-student interaction.

Research Question 6 (Social and Cultural Capital)

Independent samples *t*-test were conducted comparing the mean average of faculty-student interaction with variables for social and cultural capital. The mean of faculty-student interaction was not significantly different between the first generation and non-first-generation study participants, native English and non-native English speaking participants and those who indicated they needed help and those who indicated they did not need help completing the FAFSA. There was no significant difference for those study participants who reported having access or not having access to the internet at home. These results suggest that, among the study participants, these variables did not have an impact on the mean frequency of faculty-student interaction.

The result of the independent samples *t*-test was significant for the social, cultural capital variables of Pell eligibility (p=.010), indicating the mean of faculty-student interaction was significantly different between the study participants who were not eligible for a Pell grant and those who were eligible. Individuals who were not eligible for a Pell grant had a significantly higher mean of faculty-student interaction than those who were eligible. Pell eligibility is an indicator of financial status. Finances have been demonstrated to play an essential role impacting community college students. Research by Novak and McKinney (2011) indicated that financial aid might have a positive impact effect on student completion, especially among Pell-eligible students. There is a need for more research

regarding financial indicators and the influence they may or may not have on faculty-student interaction. This study supported that greater financial need coincides with less mean frequency of faculty-student interactions. This variable should receive consideration when developing programs that increase faculty-student interactions.

The results of ANOVA were significant (p=.004) for the mean average of faculty-student interaction and reported levels of family support. The mean of faculty-student interaction for those who indicated they felt their family was extremely supportive (M=2.42, SD=0.56) was significantly larger than for those who reported their family was quite a bit supportive (M=2.23, SD=0.51). The results indicated those study participants with a higher level of family support also have higher levels of faculty-student interaction.

The literature indicated similar results for studies regarding family-support and student success. A qualitative analysis by Sandoval-Lucero, Maes, and Klingshoth (2014) revealed that family support played a critical role in student success among African American and Latina(o) community college students. Other studies have demonstrated that encouragement and support significantly influenced student persistence (Naretto, 1995; Napoli & Wortmon, 1998; Nora (2001). Results of this study indicated that family support played a role in the increased frequency of faculty-student interaction.

Research Question 7 (Academic variables)

The longitudinal component of this study's data set enabled the evaluation of those who entered as fulltime students, had not attended another college, and either completed a degree or did not within a 100 to 200% timeframe by mean frequency of faculty-student interaction. The results of the Mann-Whitney U test were significant (p<.001) for the mean of faculty-student interaction and those who completed a degree and those who did not or yet

had not. The mean rank of those who completed an associate's degree was 133.26, and the mean rank for participants who did not complete a degree was 188.34. These results indicated that the mean of faculty-student interaction for degree completers is lower than for the group that did not complete within 100 to 200% timeframe.

Currently, no research results exist for those who have completed a degree and those who have not completed a degree concerning the frequency of faculty-student interaction for community college students. Faculty-student interaction was reported as a significant component in a student's decision to leave college before completing his/her degree (Tinto, 1975, 1993). Results of this study suggested that students who did not complete a college degree during the time frame of entry for 200 to 100% completion had a higher mean frequency of faculty-student interaction than those who did. This study controlled for the variables of fulltime status and prior attendance at another college. The limitations of the longitudinal aspects of this dataset prohibited looking at persistence by credit hours completed, course completion or other educational attainment milestones that would assist with supporting this finding. Better longitudinal data in the form of time to completion and time to exit for non-completers is needed to better understand how completion relates to faculty-student interaction. Further research is needed.

A Pearson correlation analysis was conducted for student participants' GPA at the time of the survey and faculty-student interaction. There was a significant negative correlation between the participants' GPA and faculty-student interaction (r=-0.26, p< .001). The results indicated that, as the GPA at the time of survey increases, faculty-student interaction tends to decrease. The results from this study differ from those reported in the literature regarding GPA and faculty-student interaction. All reported a positive relationship

with faculty-student interaction and GPA (Astin, 1993; Thompson, 2001; Wirt &Yeager 2014). Wirt and Yeager (2014) found that GPA was a positive predictor of faculty-student interaction for both full-time and part-time students. Unlike the study by Wirt and Yeager, the results presented in this study were not based on self-reported data but, rather, on GPA officially recorded in the college's enrollment management system. It is possible that self-reported GPAs may not be accurate.

One possible explanation for this negative correlation is that students with higher GPAs are less inclined to seek faculty-student interaction. The higher grades lend themselves to a position in which the students do not feel a need for faculty assistance. Conversely, students with lower grades may be compelled to seek help from faculty to improve their performance. There is a need for more research on the relationship between GPA and faculty-student interaction.

No significant correlation was found to exist between the participants' self-reported GPA and the actual GPA recorded in the enrollment management system for the dataset of this study. The results indicated that the self-reported GPAs of the participants in this study are incorrect. Based on these finding one should be cautious when using self-reported GPA data. There is a need for more research on the validity of self-reported GPA and its use in research.

The Mann-Whitney U test conducted for mean frequency of faculty-student interaction by major or degree type of the study participants results were significant ($p<.001$). The mean rank for participants in a Liberal Arts transfer degree was 407.02, while the mean rank for participants in a workforce/career and technical education non-transfer degree was 331.94. These results indicate that the mean frequency of faculty-student interaction of the

study participants in a Liberal Arts majors occurs on average at a significantly higher frequency than for workforce non-transfer degree study participants.

Limited research exists on differences in transfer and non-transfer student majors regarding degree completion or faculty-student interaction. Astin (1993) looked at students' majors regarding relation to engagement as part of the model of student involvement theory. Most studies looking at differences in transfer and non-transfer degrees completion have demonstrated that the most important factor to student success is receiving assistance in the selection of the right degree and doing so early in the first year (Jenkins & Cho, 2012). Wirt and Jaeger (2014) found no significant difference between faculty-student interaction and degree type (occupational or college transfer).

The differences revealed in this study may be related to differences in instructional strategies between degree types. The results suggest that, on average, there is the higher frequency of faculty-student interaction of liberal arts majors than workforce degree majors. Given that the majority of reported faculty-student interaction reported surrounds the classroom or classroom-related activities this may be one possible explanation. Further research is needed to understand the causes of this difference in faculty-student interaction.

The result of the independent samples *t*-test was significant (p=.024) for the mean of faculty-student interaction for the full-time and less than full-time categories of enrollment status. The mean of faculty-student interaction in the fulltime category of enrollment status was significantly higher than the mean of faculty-student interaction in the less than full-time category. Current research has also revealed differences for full- and part-time students for faculty-student interaction in the community college; supporting these findings (Wirt &Yeager, 2014). It is not surprising the fulltime study participants have a higher mean

frequency of faculty-student interaction than part-time given they have more time to interact with faculty in the community college setting.

Research Question 8 (Predicting Faculty-Student Interaction)

The sequential regression analysis revealed results for model comparisons and model interpretation. The analysis revealed significant predictors for faculty-student interaction based on the independent variables of the study and also brought forth several variables that did not serve as significant predictors for faculty-student interaction. Results of the sequential regression model were based on the analysis of the independent variables utilizing the comparative and correlation statistics.

Model comparisons for the blocks of independent variables used in this study revealed that demographic variables had a significant predictable relationship (3.3%) with faculty-student interaction; while environmental pull factors did not. Student effort was significant (10.9%) in predicting faculty-student interaction while social and cultural capital was not significant. Last, academic variables (8.7%) were found to have a significant relationship in predicting faculty-student interaction; suggesting that while demographic factors, student effort, and academic variables affected faculty-student interaction environmental pull factors and social and cultural capital did not. Possible explanations are provided for the independent variables as follows.

The demographic variable of marital status was found to be a significant predictor of faculty-student interaction. As previously discussed this may be attributed to the changing social perceptions and recognition of the traditional cultural institute of marriage. Other studies that looked at the relationship of marriage to faculty-student interaction did not reveal marital status to be a predictor of faculty-student interaction (Wirt & Yeager, 014). More

research is needed to understand the relationship of marital status and faculty-student interaction better. Additional research should also include a broader definition of the cultural concept of marriage as defined by today's culturally relevant age groups for community colleges.

Measures of student effort for variables related to the frequency of preparing two or more drafts for a paper or assignments before submission and frequency of using tutorial services resulted in a significant predictive relationship for faculty-student interaction. Both of these measures of student effort related directly to the nature of the context of the interaction, as both dealt with course-related discussion or work. More research is needed to determine if these variables would serve as predictors for non-course related faculty-student interaction.

Academic variables that significantly predicted faculty-student interaction included GPA at time of the survey, degree/major type and enrollment status. While other studies looking at the relationship between GPA and faculty-student interaction have found a significant relationship (Astin 1993; Wirt & Jaeger, 2014), the difference in the finding in this study was that the relationship is inverse; as GPA increased the mean frequency of faculty-student interaction decreased. Possible explanations for the differences might be that previous studies used self-reported GPA. Explanations of the relationship revealed by this study could also be that students with better grades feel less compelled to seek assistance from faculty, thus reducing their reported frequency of faculty-student interaction. The opposite may be true for those who need assistance in improving their grades.

Differences in instructional approaches employed by career and technical education and liberal arts transfer degree programs that exist may be the cause for the difference seen in

degree type and frequency of faculty-student interaction. Workforce education and degree programs tend to be more lab intense, during which time instructors work more directly with students in the classroom. CTE students tend to spend more contact hours in direct association with their instructors in comparison to liberal arts degree students. The skill-based training knowledge may lead to less discussion than liberal arts content as presented in the form of transfer degree programs. Differences in scheduling and fulltime enrollment status may also play a role. Workforce education programs more often follow a block scheduling format as well as require fulltime attendance. This requirement places students in direct contact with faculty more during classroom instruction and could result in a lower average frequency of faculty-student interaction based on the responses to the research questions. More research is needed to better understand the difference in the reported frequencies between the study participants by degree type.

Enrollment status also was found to have significant predictive capabilities in relationship to faculty-student interaction. Study participants indicating they were enrolled fulltime had higher average frequencies than those reporting they were enrolled less than fulltime. It is likely that fulltime students are more interactive with faculty due to their overall more involvement in school. They are exposed to more opportunities and need to interact with faculty than those enrolled on a part-time basis.

Summary

The findings revealed that the most influential factors impacting faculty-student interaction were related to variables for student effort and academics. Students who enrolled full-time, majored in a liberal arts degree, more frequently prepared multiple drafts of papers or assignments before submission and sought out the use of tutorial services were more likely

to have a higher frequency of faculty-student interaction. In regard to GPA, an inverse relationship was found in comparison to other studies. Results indicated that for this study as GPA increased the frequency of faculty-student interaction decreased. Of equal importance, variables for environmental pull factors and social and cultural capital were found to not have a significant influence on the frequency of faculty-student interaction.

Implications for Policy and Practice

If the United States intends to return to its place as a global leader in the number of post-secondary graduates per capita and achieve the goal set forth to have the highest proportion of college graduates in the world, then better strategies must be put in place to ensure success for students at community colleges. Implications of this study and others on community college specific faculty-student interaction highlight the importance of implementing practices that increase opportunities for enhancing faculty-student interaction. Such practices will have a positive impact on degree attainment. To do so, administrators at community colleges must develop incentives that support faculty involvement with students outside the classroom (Hagedorn et al. 2002). Lundberg (2014) posited frequent faculty-student interaction as the most influential predictor of student success in five areas: general education, intellectual skills, science and technology, personal development, and career preparation. Lundberg's study focused on interactions out of the classroom and the inclusion of discussion topics other than coursework. Three of the eight values in the faculty interaction scale addressed non-curricular activities (career plans, personal issues, and current events). Lundberg's study is essential in demonstrating that out-of-class interaction is important to community college student success. Until a higher frequency of faculty-student

interaction is occurring in community colleges, it will not be possible to gauge the effect it may have on degree attainment.

Changing the reward system for faculty is one approach that may promote more faculty-student interaction outside the classroom. Recognition of faculty who frequently invest in efforts to engage students out of the classroom is necessary. This recognition needs to take place at a large scale on state and national levels to serve as models for recognition in local community college campuses. Widespread study and acknowledgment by critical organizations (ATD, CCSSE, AACC) could produce extensive research for identification of existing community college programs that identify best practices in facilitating faculty-student interaction outside the classroom. This research could then be shared and implemented at community colleges on the local level across the nation.

At the local level for the importance of faculty-student interaction to be fully endorsed, it must be holistically embraced and supported by all units across a campus to be most effective and align to ensure non-duplicative efforts. This holistic approach will require cooperative efforts by academic as well as non-academic units. The importance of faculty-student interaction must be incorporated into the college culture; and must be accomplished through the introduction of its importance in new faculty orientation/training sessions, professional development, and continued training opportunities.

One change that must be considered to more efficiently promote faculty-student interaction is policy at the institutional level regarding faculty office hours. Despite the positive benefits of faculty-student interaction outside of the classroom, most studies have found that actual communication between faculty and students is occasional and primarily limited to a classroom context or items directly related to the classroom (Pascarella 1980;

Jasma & Kopper, 1999; Nadler & Nadler 2000). The results presented in this study support this, with the exception of email communication. The traditional practice of holding office hours has long been a required part of a professor's teaching responsibilities both at the four-year and two-year institutes. It is designed to provide students the opportunity for informal communication beyond the classroom, to seek additional help and ask questions. The traditional practice of office hours serving as higher education's cornerstone of practice for facilitating faculty-student interaction outside the classroom may be an unrealistic approach to reaching students in today's educational environment. This practice may be particularly true for the community college given its students' characteristics.

The practice of office hours is significant in that it is a widely accepted approach to facilitating faculty-student interaction; however, studies have revealed that students rarely take advantage of the opportunity and, when they do, the visits tend to be brief and succinct in nature (Nadler & Nadler, 2000; Ku & Huh, 2001; Bippus, Kearney, Plax, & Brooks, 2003). Research by Jasma and Kopper (1999) and Fusani (1994) found that fewer than half of the students in the study reported visiting their professor outside the classroom. Results from this study, while not explicitly relating to office hours, would seem to suggest a similar frequency of occurrence given the limited frequency of out-of-classroom interaction reported. Studies have also demonstrated that the use of office hours may also be problematic due to the professor's unannounced absence (Stephens, 2012). Regardless of who shows or does not, the current use of office hours as a strategy for increasing faculty-student interaction is problematic.

Better use of office hours may come in the form of developing strategies that require students and faculty to be more involved in them. An example would be having faculty

require students to stop by the office for a short visit during an office hour to complete an early assignment in the course to promote a level of comfort that could enhance future interactions. Faculty could also require students who are performing poorly in the class to stop during a specific office hour time to discuss performance issues.

Alternatively, community colleges must revisit policies regarding a mandatory number of office hours and develop ways that are more effective at promoting faculty-student interaction. This rethinking of policy may result in trading office hours for more productive strategies such as spending time in labs and tutoring centers; fieldwork with students; service learning experiences; field trips; or promoting sponsorship of student clubs and organizations. One promising practice is when faculty serve as mentors to students and periodically meet with them in and out of the class context to promote their success (Cox & Orehovec, 2007). Additionally, colleges may want to consider the development of a college committee comprised of both faculty and students that focuses on issues surrounding faculty-student relationships; promoting and fostering increased effectiveness of relationships.

In an attempt to increase accessibility, some faculty have adopted virtual office hours. Students typically prefer seeking help through email for both online and traditional courses (Krisantas & Chow, 2007). Findings of this study support the use of electronic communications as the dominant method of faculty-student interaction. Research regarding the benefits of shifting the office to an online meeting space is limited. Li and Pitts (2009) reported that students' use of virtual office hours were not significantly different from their use of traditional office hours; however, participants in the study reported higher levels of satisfaction with office hours than students in classes that offered only traditional face-to-face

office hours. More research regarding the utilization of virtual office hours is needed to examine if this is an effective means of increasing faculty-student interaction.

The role of faculty-student interaction at the community college level is further challenged by a large number of part-time faculty employed. Increasing the number of fulltime faculty in community colleges is another strategy to increase student access to faculty (Jaeger & Eagan, 2009). While current trends have witnessed an increase in the hiring of adjunct faculty in higher education as a cost savings measure, no studies have been conducted to examine whether the money saved actually reduces overall spending or is the cost being shifted to cover other expenses. Perhaps even more disheartening is that this shift to greater reliance on part-time faculty has not been guided by research on quality of education and what works to increase student success but, rather, solely based on economic factors.

Community colleges must receive fair funding to implement the required resources to ensure student success. Increased appropriations could be used to offset costs associated with increasing faculty-student interaction both in and out of the classroom. Currently, 90% of a community college faculty member's time is devoted to teaching (NCES, 2010). If a percentage of funding were diverted to support initiatives that focus on increasing faculty-student interaction, improvement in student success could be obtained. These measures should include programs such as mentoring, early alert interventions, and general out of class faculty interaction with at-risk students. Such an approach will require a fundamental shift in the way the role of community college faculty is currently defined across the nation. Just as current government support for research at four-year universities is embraced, the community

college must become recognized similarly for student success, and at the heart of that success should be faculty-student interaction.

In fall 2015, 38% of all undergraduate students attended public and private two-year colleges. Among fulltime all undergraduates, approximately one fourth (24%) attended community colleges (Giner, Kelly-Ried, & Mann, 2017). Yet, community colleges continue to receive unequal funding. De Alva and Schneider (2015) reported that total federal, state, and local appropriations and tax subsidies per fulltime equivalent student are $41,100 at private high-endowment institutions, $15,300 at public flagship institutions, $6,700 at regional public institutions, and $5,100 at community colleges. The authors further demonstrated that, during the period from 2001 to 2011, funding increased substantially at public and private research universities, while public community colleges saw a $904 (per pupil) decline in real funding. The current funding structure ends up being incredibly ineffective because while the costs of community college are relatively low, their low completion rates actually mean that the costs per degree or certificate are high; in some cases, perhaps higher than their four-year public counterparts. Changes in the funding structure that ensure a greater emphasis on needs and output in the form of completion is needed. All of the implications and recommended changes from this study will require increased resources.

The findings also present a dilemma regarding how faculty, or student for that matter, can increase the frequency of their interactions for that student who have limited interaction. The demographic characteristics that indicated lower frequencies of interaction represent barriers that cannot just be changed for the sake of increasing faculty-student interaction. For example, it was concluded that for marital status, single students reported a significantly higher mean frequency of faculty-student interaction that those who were married. Similarly,

it is not realistic for students in financial need to just work less to interact with faculty more. Better approaches to facilitating faculty-student interaction are needed regardless of demographic or other associated student characteristics that may serve to impede interaction. Time-saving measures that are inclusive of all students and faculty need to be identified or developed and implemented.

Recommendations for Future Research

While this study provided some insight into factors that may influence faculty-student interaction and that may ultimately be used to help develop better approaches to promoting faculty-student interaction, it also demonstrated some areas where future research is needed. This study examined factors that may influence faculty-student interaction in the community college. It used a unique secondary data set that comprised of three different sources; one that is part of a national survey effort, another from an institutional information collection process and the third being the institution's enrollment management system. These represent the types of data readily available to most community colleges. It offers the benefits of comparability for some variables to national benchmarks, reliance on both self and non-self-reported data as well as the ability to incorporate limited longitudinal factors into the research strategy. Additional research questions need to be addressed using this approach to data utilization.

Additional research needs to be conducted using a larger study population in order to incorporate completion metrics and longitudinal measures of student success. The ability to integrate the CCSR dataset with other secondary data sources relies on the use of self-reported student identification numbers. Many students did not report or reported an unidentifiable student identification number. The CCSSEE organization offers the option of

oversampling as a strategy to increase sample size for institutional research purposes. Oversampling as well as incorporating more than two years of results would assist in overcoming limitations of self-reported identification numbers.

Additional research for faculty-student interaction is also needed to better understand it about the various levels of its occurrence within higher education. This research should be conducted using more advanced statistical procedure such as hierarchical linear modeling. Hierarchical linear modeling is an ordinary least square regression-based analysis that takes the hierarchical structure of the data into account. Hierarchically structured data is nested data where groups of units are clustered together in an organized fashion (Bryk & Raudenbush, 1992). This analysis should include the various levels of higher education, such as; in the college classroom, academic program, and intuitional level. It should include differences between intuitions as reflective of community colleges nationwide, as a whole. This type of analysis would provide increase our knowledge of the importance of faculty-student interaction.

Another recommendation for future research is to utilize different methods of research. The studies in the research literature regarding faculty-student interaction are predominately quantitative. Employing a qualitative or mixed methods approach will augment the current research literature by examining the nature of faculty-student interaction from a different viewpoint. A qualitative approach may help in exploring students' meanings attached to their experiences as well as help with a better understanding of the values associated with different types of interaction, in particular out of classroom experiences. A better understanding of associated factors that prevent out of classroom faculty-student interaction is needed.

Additional research on the different types of faculty-student interaction and the level or quality of the interaction regarding meaningfulness attributed to the interaction between the participants is needed. Current data suggest that the most frequent faculty-student interaction surrounds coursework or content closely related to classroom interaction. Greater research into understanding why this is most prevalent could lead to strategies to help promote other and perhaps more meaningful types of faculty-student interaction.

Studying the differing types of faculty-student interaction also needs to be conducted more specifically regarding occurrences in an online environment. This study, as well as the national benchmark data, have suggested that online faculty-student interaction is the most prevalent form exhibited in community colleges. There is a need for more in-depth exploration of the subjects, nature, and frequency of emails. Future studies should include not only the frequency of emails sent but also the responses. Methods of examining the perceived effectiveness of the communication by both student and faculty also need to be considered. Electronic mediums other than email also need to be considered regarding frequency and value, this should include forms of social media, instant messaging via the internet as well as the use of cell phones for text message communications.

This study focused solely on the response of students to questions regarding their frequency of interactions with faculty. Additionally, the role of faculty and their perceptions of faculty-student interactions also need to be considered. Differences among full- and part-time faculty are of particular importance to the community college. An increased understanding of the values placed on out of class student interaction by faculty could reveal essential factors relating to its current infrequency in community colleges.

Future research also needs to be directed at the concept of office hours as a practice of faculty-student interaction. As previously discussed what little literature exists indicated that they are overall ineffective in facilitating interaction. Specific attention should focus on the historical aspects of the practice of office hours concerning modern technological applications as well as cultural practices of students. Research presented in this study has indicated that email is the dominant means by which community college faculty and students interact outside of the classroom. New methods of facilitating faculty-student interaction in place of the traditional office hour could produce a higher frequency of faculty-student interaction, increasing persistent and retention. Research must also incorporate methods for measuring the effectiveness of these practices.

Faculty-student interaction is a form of human social interaction. Numerous characteristics that makeup personality traits, as well as cultural differences, may influence both the frequency, meaning and types of interactions that transpire. Future research conducted on the personality types of students, faculty, and how these personality types relate to faculty-student interaction would be useful to increase knowledge of faculty-student interaction. Such research could lead to a greater knowledge of how individual differences impact interaction and lead to improved methods for increasing faculty-student interaction.

The incorporation of additional variables into the study of faculty-student interaction should also be included for future research. One of specific importance for community colleges is variables associated with academic preparedness. Factors associated with college readiness should include both the frequency and types of faculty-student interaction. Further research should include data sources such as placement tests scores, developmental education course progress as well as number and type of remediation needed. Additionally, comparison

of faculty-student interaction needs to take place for students who are identified as college-ready versus those that are not.

Additional research using variables that indicate retention, persistence and completion also needs to be conducted. This research should include milestones of measures of momentum toward degree completion related to faculty-student interaction. Variables for number credit hours attempted versus completed, as well as time to completion for a specified number of credit hours would reveal greater insight into the role faculty-student interaction plays in degree attainment.

Given the consensus of the vital role faculty-student interaction plays in student development and degree attainment, updating research on current best practices that promote high levels of faculty-student interaction needs to take place. Identification of and replication of practices that show the most promise for promoting faculty-student interaction will lead to an overall improvement in the culture of community colleges. The use of the CCSSEE national benchmark data could be used to identify participating institutions that have high frequencies of reported faculty-student interaction. These institutions could serve as models for approaches they are using to promote faculty-student interaction as well as studies to understand better the impact it is having.

Conclusion

The United States must increase the number of students who complete a certificate or degree in order increase its current skilled labor market and be competitive in a global context. Unfortunately, community colleges are currently struggling to increase the number of graduates. Community colleges play a crucial role as it is the focus of their mission to provide a skilled workforce and provide students with lower economic status an opportunity

to advance to a better way of life. The mission of the community college and the U.S. as returning to a global leader in education are inexplicably intertwined.

The overall purpose of this study was to examine the relationship of environmental pull factors, student effort, social and cultural capital, and academics to the frequency of faculty-student interaction in the community college. The faculty-student relationship is at the heart of the learning process and student engagement. It is essential that a better understanding of faculty-student interaction be established by increasing knowledge of factors that may, or may not influence faculty-student interaction. This knowledge can then, in turn, be used to promote practices that increase faculty-student interaction and ultimately lead to increased degree attainment.

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APPENDIX A. COMMUNITY COLLEGE STUDENT REPORT SURVEY INSTRUMENT

The Community College Student Report

Instructions: It is essential that you use a No. 2 pencil to complete this survey. Mark your answers as shown in the following example: ● Correct Mark ⊘ ⊗ ◒ ◶ Incorrect Marks

1. **Did you begin college at this college or elsewhere?** ○ Started here ○ Started elsewhere

2. **Thinking about this current academic term, how would you characterize your enrollment at this college?** ○ Full-time ○ Less than full-time

3. **Have you taken this survey in another class this term?** ○ Yes ○ No

4. **In your experiences at this college during the current school year, about how often have you done each of the following?**

	Very often	Often	Some-times	Never
a. Asked questions in class or contributed to class discussions	○	○	○	○
b. Made a class presentation	○	○	○	○
c. Prepared two or more drafts of a paper or assignment before turning it in	○	○	○	○
d. Worked on a paper or project that required integrating ideas or information from various sources	○	○	○	○
e. Come to class without completing readings or assignments	○	○	○	○
f. Worked with other students on projects during class	○	○	○	○
g. Worked with classmates outside of class to prepare class assignments	○	○	○	○
h. Tutored or taught other students (paid or voluntary)	○	○	○	○
i. Participated in a community-based project as a part of a regular course	○	○	○	○
j. Used the Internet or instant messaging to work on an assignment	○	○	○	○
k. Used e-mail to communicate with an instructor	○	○	○	○
l. Discussed grades or assignments with an instructor	○	○	○	○
m. Talked about career plans with an instructor or advisor	○	○	○	○
n. Discussed ideas from your readings or classes with instructors outside of class	○	○	○	○
o. Received prompt feedback (written or oral) from instructors on your performance	○	○	○	○
p. Worked harder than you thought you could to meet an instructor's standards or expectations	○	○	○	○
q. Worked with instructors on activities other than coursework	○	○	○	○
r. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	○	○	○	○
s. Had serious conversations with students of a different race or ethnicity other than your own	○	○	○	○
t. Had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values	○	○	○	○
u. Skipped class	○	○	○	○

5. **During the current school year, how much has your coursework at this college emphasized the following mental activities?**

	Very much	Quite a bit	Some	Very little
a. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	○	○	○	○
b. Analyzing the basic elements of an idea, experience, or theory	○	○	○	○
c. Synthesizing and organizing ideas, information, or experiences in new ways	○	○	○	○
d. Making judgments about the value or soundness of information, arguments, or methods	○	○	○	○
e. Applying theories or concepts to practical problems or in new situations	○	○	○	○
f. Using information you have read or heard to perform a new skill	○	○	○	○

PLEASE DO NOT MARK IN THIS AREA

SERIAL #

6. During the current school year, about how much reading and writing have you done at this college?

	None	1 to 4	5 to 10	11 to 20	More than 20
a. Number of assigned textbooks, manuals, books, or book-length packs of course readings	○	○	○	○	○
b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment	○	○	○	○	○
c. Number of written papers or reports of any length	○	○	○	○	○

7. Mark the response that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college.

Extremely challenging ⑦ ⑥ ⑤ ④ ③ ② ① Extremely easy

8. Which of the following have you done, are you doing, or do you plan to do while attending this college?

	I have done	I plan to do	I have not done nor plan to do
a. Internship, field experience, co-op experience, or clinical assignment	○	○	○
b. English as a second language course	○	○	○
c. Developmental/remedial reading course	○	○	○
d. Developmental/remedial writing course	○	○	○
e. Developmental/remedial math course	○	○	○
f. Study skills course	○	○	○
g. Honors course	○	○	○
h. College orientation program or course	○	○	○
i. Organized learning communities (linked courses/study groups led by faculty or counselors)	○	○	○

9. How much does this college emphasize each of the following?

	Very much	Quite a bit	Some	Very little
a. Encouraging you to spend significant amounts of time studying	○	○	○	○
b. Providing the support you need to help you succeed at this college	○	○	○	○
c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	○	○	○	○
d. Helping you cope with your non-academic responsibilities (work, family, etc.)	○	○	○	○
e. Providing the support you need to thrive socially	○	○	○	○
f. Providing the financial support you need to afford your education	○	○	○	○
g. Using computers in academic work	○	○	○	○

10. About how many hours do you spend in a typical 7-day week doing each of the following?

	None	1 – 5	6 - 10	11 - 20	21 - 30	More than 30
a. Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activities related to your program)	○	○	○	○	○	○
b. Working for pay	○	○	○	○	○	○
c. Participating in college-sponsored activities (organizations, campus publications, student government, intercollegiate or intramural sports, etc.)	○	○	○	○	○	○
d. Providing care for dependents living with you (parents, children, spouse, etc.)	○	○	○	○	○	○
e. Commuting to and from classes	○	○	○	○	○	○

11. Mark the number that best represents the quality of your relationships with people at this college.

Your relationship with:

a. Other Students

Friendly, supportive, sense of belonging ⑦ ⑥ ⑤ ④ ③ ② ① Unfriendly, unsupportive, sense of alienation

b. Instructors

Available, helpful, sympathetic ⑦ ⑥ ⑤ ④ ③ ② ① Unavailable, unhelpful, unsympathetic

c. Administrative Personnel & Offices

Helpful, considerate, flexible ⑦ ⑥ ⑤ ④ ③ ② ① Unhelpful, inconsiderate, rigid

12. How much has YOUR EXPERIENCE AT THIS COLLEGE contributed to your knowledge, skills, and personal development in the following areas?

	Very much	Quite a bit	Some	Very little
a. Acquiring a broad general education	○	○	○	○
b. Acquiring job or work-related knowledge and skills	○	○	○	○
c. Writing clearly and effectively	○	○	○	○
d. Speaking clearly and effectively	○	○	○	○
e. Thinking critically and analytically	○	○	○	○
f. Solving numerical problems	○	○	○	○
g. Using computing and information technology	○	○	○	○
h. Working effectively with others	○	○	○	○
i. Learning effectively on your own	○	○	○	○
j. Understanding yourself	○	○	○	○
k. Understanding people of other racial and ethnic backgrounds	○	○	○	○
l. Developing a personal code of values and ethics	○	○	○	○
m. Contributing to the welfare of your community	○	○	○	○
n. Developing clearer career goals	○	○	○	○
o. Gaining information about career opportunities	○	○	○	○

SERIAL # PLEASE DO NOT MARK IN THIS AREA

13. **This section has three parts. Please answer all three sections, indicating (1) HOW OFTEN you use the following services, (2) HOW SATISFIED you are with the services, and (3) HOW IMPORTANT the services are to you AT THIS COLLEGE.**

	(1) Frequency of Use				(2) Satisfaction				(3) Importance		
	Often	Some-times	Rarely/ Never	Don't know/ N.A.	Very	Some-what	Not at all	N.A.	Very	Some-what	Not at all
a. Academic advising/planning	○	○	○	○	○	○	○	○	○	○	○
b. Career counseling	○	○	○	○	○	○	○	○	○	○	○
c. Job placement assistance	○	○	○	○	○	○	○	○	○	○	○
d. Peer or other tutoring	○	○	○	○	○	○	○	○	○	○	○
e. Skill labs (writing, math, etc.)	○	○	○	○	○	○	○	○	○	○	○
f. Child care	○	○	○	○	○	○	○	○	○	○	○
g. Financial aid advising	○	○	○	○	○	○	○	○	○	○	○
h. Computer lab	○	○	○	○	○	○	○	○	○	○	○
i. Student organizations	○	○	○	○	○	○	○	○	○	○	○
j. Transfer credit assistance	○	○	○	○	○	○	○	○	○	○	○
k. Services to students with disabilities	○	○	○	○	○	○	○	○	○	○	○

SAMPLE

14. **How likely is it that the following issues would cause you to withdraw from class or from this college?** *(Please respond to each item)*

	Very likely	Likely	Some-what likely	Not likely
a. Working full-time	○	○	○	○
b. Caring for dependents	○	○	○	○
c. Academically unprepared	○	○	○	○
d. Lack of finances	○	○	○	○
e. Transfer to a 4-year college or university	○	○	○	○

SAMPLE

15. **How supportive are your friends of your attending this college?** ○ Extremely ○ Quite a bit ○ Somewhat ○ Not very

16. **How supportive is your immediate family of your attending this college?** ○ Extremely ○ Quite a bit ○ Somewhat ○ Not very

17. **Indicate which of the following are your reasons/goals for attending this college.** *(Please respond to each item)*

	Primary goal	Secondary goal	Not a goal
a. Complete a certificate program	○	○	○
b. Obtain an associate degree	○	○	○
c. Transfer to a 4-year college or university	○	○	○
d. Obtain or update job-related skills	○	○	○
e. Self-improvement/personal enjoyment	○	○	○
f. Change careers	○	○	○

PLEASE DO NOT MARK IN THIS AREA

SERIAL #

18. **Indicate which of the following are sources you use to pay your tuition at this college? *(Please respond to each item)***

	Major source	Minor source	Not a source
a. My own income/savings	○	○	○
b. Parent or spouse/significant other's income/savings	○	○	○
c. Employer contributions	○	○	○
d. Grants and scholarships	○	○	○
e. Student loans (bank, etc.)	○	○	○
f. Public assistance	○	○	○

19. **Since high school, which of the following types of schools have you attended other than the one you are now attending? *(Please mark all that apply)***

- ○ Proprietary (private) school or training program
- ○ Public vocational-technical school
- ○ Another community or technical college
- ○ 4-year college or university
- ○ None

SAMPLE

20. **When do you plan to take classes at this college again?**

- ○ I will accomplish my goal(s) during this term and will not be returning
- ○ I have no current plan to return
- ○ Within the next 12 months
- ○ Uncertain

SAMPLE

21. **At this college, in what range is your overall college grade average?**

- ○ A
- ○ A- to B+
- ○ B
- ○ B- to C+
- ○ C
- ○ C- or lower
- ○ Do not have a GPA at this school
- ○ Pass/fail classes only

SAMPLE

22. **When do you most frequently take classes at this college? *(Mark one only)***

- ○ Day classes (morning or afternoon)
- ○ Evening classes
- ○ Weekend classes

23. **How many TOTAL credit hours have you earned at this college, not counting the courses you are currently taking this term?**

- ○ None
- ○ 1-14 credits
- ○ 15-29 credits
- ○ 30-44 credits
- ○ 45-60 credits
- ○ Over 60 credits

24. **At what other types of institutions are you taking classes this term?** *(Please mark all that apply)*

- ◯ None
- ◯ High school
- ◯ Vocational/technical school
- ◯ Another community or technical college
- ◯ 4-year college/university
- ◯ Other

25. **How many classes are you *presently* taking at OTHER institutions?**

- ◯ None
- ◯ 1 class
- ◯ 2 classes
- ◯ 3 classes
- ◯ 4 classes or more

26. **Would you recommend this college to a friend or family member?**

◯ Yes ◯ No

27. **How would you evaluate your entire educational experience at this college?**

- ◯ Excellent
- ◯ Good
- ◯ Fair
- ◯ Poor

28. **Do you have children who live with you?**

◯ Yes ◯ No

29. **Mark your age group.**

- ◯ Under 18
- ◯ 18 to 19
- ◯ 20 to 21
- ◯ 22 to 24
- ◯ 25 to 29
- ◯ 30 to 39
- ◯ 40 to 49
- ◯ 50 to 64
- ◯ 65+

30. **Your sex:**

◯ Male ◯ Female

31. **Are you married?**

◯ Yes ◯ No

32. **Is English your native (first) language?**

◯ Yes ◯ No

33. **Are you an international student or foreign national?**

○ Yes ○ No

34. **What is your racial identification?** *(Mark only one)*

○ American Indian or other Native American
○ Asian, Asian American or Pacific Islander
○ Native Hawaiian
○ Black or African American, Non-Hispanic
○ White, Non-Hispanic
○ Hispanic, Latino, Spanish
○ Other

35. **What is the highest academic credential you have earned?**

○ None
○ High school diploma or GED
○ Vocational/technical certificate
○ Associate degree
○ Bachelor's degree
○ Master's/doctoral/professional degree

36. **What is the highest level of education obtained by your:**

	Father	Mother
a. Not a high school graduate	○	○
b. High school diploma or GED	○	○
c. Some college, did not complete degree	○	○
d. Associate degree	○	○
e. Bachelor's degree	○	○
f. Master's degree/1st professional	○	○
g. Doctorate degree	○	○
h. Unknown	○	○

37. **Using the list provided, please fill in the bubbles that correspond to the code indicating your program or major. Using the first column, indicate the first number in the program code, using the second column, indicate the second number in the program code.**

38. Please provide your student identification number by filling in the corresponding bubbles. For example, in the first column, indicate the first number or letter in your student ID number, and so forth. (OPTIONAL)

(Please begin here)

Additional Items (Please respond to these items if requested)

1. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
2. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
3. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
4. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
5. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
6. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
7. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
8. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
9. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
10. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
11. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
12. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
13. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
14. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
15. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
16. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
17. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
18. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
19. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
20. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

Your responses will remain confidential and individual responses will not be reported.

Thank you for sharing your views.

Mark Reflex® forms by Pearson NCS MM252416-2 654321 ED99 Printed in U.S.A.

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SERIAL #

APPENDIX B. COMMUNITY COLLEGE SURVEY OF STUDENT ENGAGEMENT (CCSSE) 2013 MAIN CODEBOOK

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Survey number	SURVEYNO	
Item 1		
1. Did you begin college at this college or elsewhere?	ENTER	1 = Started here 2 = Started elsewhere
Item 2		
2. Thinking about this current academic term, how would you characterize your enrollment at this college?	ENRLMENT	1 = Less than full-time 2 = Full-time
Item 3		
3. Have you taken this survey in another class this term?	SRVAGAIN	1 = Yes 2 = No
Item 4: In your experiences at this college during the current school year, about how often have you done each of the following?		
4a. Asked questions in class or contributed to class discussions	CLQUEST	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4b. Made a class presentation	CLPRESEN	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4c. Prepared two or more drafts of a paper or assignment before turning it in	REWROPAP	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4d. Worked on a paper or project that required integrating ideas or information from various sources	INTEGRAT	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4e. Came to class without completing readings or assignments	CLUNPREP	1 = Never 2 = Sometimes 3 = Often 4 = Very often

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 4: In your experiences at this college during the current school year, about how often have you done each of the following?		
4f. Worked with other students on projects during class	CLASSGRP	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4g. Worked with classmates outside of class to prepare class assignments	OCCGRP	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4h. Tutored or taught other students (paid or voluntary)	TUTOR	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4i. Participated in a community-based project as a part of a regular course	COMMPROJ	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4j. Used the Internet or instant messaging to work on an assignment	INTERNET	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4k. Used e-mail to communicate with an instructor	EMAIL	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4l. Discussed grades or assignments with an instructor	FACGRADE	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4m. Talked about career plans with an instructor or advisor	FACPLANS	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4n. Discussed ideas from your readings or classes with instructors outside of class	FACIDEAS	1 = Never 2 = Sometimes 3 = Often 4 = Very often

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 4: In your experiences at this college during the current school year, about how often have you done each of the following?		
4o. Received prompt feedback (written or oral) from instructors on your performance	FACFEED	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4p. Worked harder than you thought you could to meet an instructor's standards or expectations	WORKHARD	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4q. Worked with instructors on activities other than coursework	FACOTH	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4r. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	OOCIDEAS	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4s. Had serious conversations with students of a different race or ethnicity other than your own	DIVRSTUD	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4t. Had serious conversations with students who differ from you in terms of their religious beliefs, political opinions, or personal values	DIFFSTUD	1 = Never 2 = Sometimes 3 = Often 4 = Very often
4u. Skipped class	SKIPCLAS	1 = Never 2 = Sometimes 3 = Often 4 = Very often
Item 5: During the current school year, how much has your coursework at this college emphasized the following mental activities?		
5a. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	MEMORIZE	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 5: During the current school year, how much has your coursework at this college emphasized the following mental activities?		
5b. Analyzing the basic elements of an idea, experience, or theory	ANALYZE	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
5c. Synthesizing and organizing ideas, information, or experiences in new ways	SYNTHESZ	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
5d. Making judgments about the value or soundness of information, arguments, or methods	EVALUATE	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
5e. Applying theories or concepts to practical problems or in new situations	APPLYING	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
5f. Using information you have read or heard to perform a new skill	PERFORM	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
Item 6: During the current school year, about how much reading and writing have you done at this college?		
6a. Number of assigned textbooks, manuals, books, or book-length packs of course readings	READASGN	1 = None 2 = 1 to 4 3 = 5 to 10 4 = 11 to 20 5 = More than 20
6b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment	READOWN	1 = None 2 = 1 to 4 3 = 5 to 10 4 = 11 to 20 5 = More than 20

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 6: During the current school year, about how much reading and writing have you done at this college?		
6c. Number of written papers or reports of any length	WRITEANY	1 = None 2 = 1 to 4 3 = 5 to 10 4 = 11 to 20 5 = More than 20
Item 7		
7. Mark the response that best represents the extent to which your examinations during the current school year have challenged you to do your best work at this college	EXAMS	1 = (1) Extremely easy 2 = (2) 3 = (3) 4 = (4) 5 = (5) 6 = (6) 7 = (7) Extremely challenging
Item 8: Which of the following have you done, are you doing, or do you plan to do while attending this college?		
8a. Internship, field experience, co-op experience, or clinical assignment	INTERN	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8b. English as a second language course	ESL	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8c. Developmental/remedial reading course	DEVREAD	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8d. Developmental/remedial writing course	DEVWRITE	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8e. Developmental/remedial math course	DEVMATH	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8f. Study skills course	STUDSKIL	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8g. Honors course	HONORS	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 8: Which of the following have you done, are you doing, or do you plan to do while attending this college?		
8h. College orientation program or course	ORIEN	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
8i. Organized learning communities (linked courses/study groups led by faculty or counselors)	LRNCOMM	1 = I have not done nor plan to do 2 = I plan to do 3 = I have done
Item 9: How much does this college emphasize each of the following?		
9a. Encouraging you to spend significant amounts of time studying	ENVSCHOL	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9b. Providing the support you need to help you succeed at this college	ENVSUPRT	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	ENVDIVRS	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9d. Helping you cope with your non-academic responsibilities (work, family, etc.)	ENVNACAD	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9e. Providing the support you need to thrive socially	ENVSOCAL	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9f. Providing the financial support you need to afford your education	FINSUPP	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
9g. Using computers in academic work	ENVCOMP	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 10: About how many hours do you spend in a typical 7-day week doing each of the following?		
10a. Preparing for class (studying, reading, writing, rehearsing, doing homework, or other activites related to your program)	ACADPR01	0 = None 1 = 1-5 hours 2 = 6-10 hours 3 = 11-20 hours 4 = 21-30 hours 5 = More than 30 hours
10b. Working for pay	PAYWORK	0 = None 1 = 1-5 hours 2 = 6-10 hours 3 = 11-20 hours 4 = 21-30 hours 5 = More than 30 hours
10c. Participating in college-sponsored activities (organizations, campus publications, student government, intercollegiate or intramural sports, etc.)	COCURR01	0 = None 1 = 1-5 hours 2 = 6-10 hours 3 = 11-20 hours 4 = 21-30 hours 5 = More than 30 hours
10d. Providing care for dependents living with you (parents, children, spouse, etc.)	CAREDE01	0 = None 1 = 1-5 hours 2 = 6-10 hours 3 = 11-20 hours 4 = 21-30 hours 5 = More than 30 hours
10e. Commuting to and from classes	COMMUTE	0 = None 1 = 1-5 hours 2 = 6-10 hours 3 = 11-20 hours 4 = 21-30 hours 5 = More than 30 hours

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 11: Mark the number that best represents the quality of your relationships with people at this college.		
11a. Other students	ENVSTU	1 = (1) Unfriendly, unsupportive, sense of alienation 2 = (2) 3 = (3) 4 = (4) 5 = (5) 6 = (6) 7 = (7) Friendly, supportive, sense of belonging
11b. Instructors	ENVFAC	1 = (1) Unavailable, unhelpful, unsympathetic 2 = (2) 3 = (3) 4 = (4) 5 = (5) 6 = (6) 7 = (7) Available, helpful, sympathetic
11c. Administrative personnel and offices	ENVADM	1 = (1) Unhelpful, inconsiderate, rigid 2 = (2) 3 = (3) 4 = (4) 5 = (5) 6 = (6) 7 = (7) Helpful, considerate, flexible
Item 12: How much has your experience at this college contributed to your knowledge, skills, and personal development in the following areas?		
12a. Acquiring a broad general education	GNGENLED	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12b. Acquiring job or work-related knowledge and skills	GNWORK	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12c. Writing clearly and effectively	GNWRITE	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 12: How much has your experience at this college contributed to your knowledge, skills, and personal development in the following areas?		
12d. Speaking clearly and effectively	GNSPEAK	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12e. Thinking critically and analytically	GNANALY	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12f. Solving numerical problems	GNSOLVE	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12g. Using computing and information technology	GNCMPTS	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12h. Working effectively with others	GNOTHERS	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12i. Learning effectively on your own	GNINQ	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12j. Understanding yourself	GNSELF	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12k. Understanding people of other racial and ethnic backgrounds	GNDIVERS	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 12: How much has your experience at this college contributed to your knowledge, skills, and personal development in the following areas?		
12l. Developing a personal code of values and ethics	GNETHICS	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12m. Contributing to the welfare of your community	GNCOMMUN	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12n. Developing clearer career goals	CARGOAL	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
12o. Gaining information about career opportunities	GAINCAR	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
Item 13.1: How often do you use the following services at this college?		
13.1a. Academic advising/planning	USEACAD	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1b. Career counseling	USECACOU	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1c. Job placement assistance	USEJOBPL	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1d. Peer or other tutoring	USETUTOR	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 13.1: How often do you use the following services at this college?		
13.1e. Skill labs (writing, math, etc.)	USELAB	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1f. Child care	USECHLD	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1g. Financial aid advising	USEFAADV	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1h. Computer lab	USECOMLB	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1i. Student organizations	USESTORG	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1j. Transfer credit assistance	USETRCRD	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
13.1k. Services to students with disabilities	USEDISAB	0 = Don't know/N.A. 1 = Rarely/Never 2 = Sometimes 3 = Often
Item 13.2: How satisfied are you with the following services at this college?		
13.2a. Academic advising/planning	SATACAD	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very

Please note the following for the *CCSSE* dataset: Invalid responses are coded as missing, represented by "." or an empty cell.

Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 13.2: How satisfied are you with the following services at this college?		
13.2b. Career counseling	SATCACOU	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2c. Job placement assistance	SATJOBPL	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2d. Peer or other tutoring	SATTUTOR	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2e. Skill labs (writing, math, etc.)	SATLAB	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2f. Child care	SATCHLD	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2g. Financial aid advising	SATFAADV	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2h. Computer lab	SATCOMLB	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2i. Student organizations	SATSTORG	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
13.2j. Transfer credit assistance	SATTRCRD	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 13.2: How satisfied are you with the following services at this college?		
13.2k. Services to students with disabilities	SATDISAB	0 = N.A. 1 = Not at all 2 = Somewhat 3 = Very
Item 13.3: How important are the following services to you at this college?		
13.3a. Academic advising/planning	IMPACAD	1 = Not at all 2 = Somewhat 3 = Very
13.3b. Career counseling	IMPCACOU	1 = Not at all 2 = Somewhat 3 = Very
13.3c. Job placement assistance	IMPJOBPL	1 = Not at all 2 = Somewhat 3 = Very
13.3d. Peer or other tutoring	IMPTUTOR	1 = Not at all 2 = Somewhat 3 = Very
13.3e. Skill labs (writing, math, etc.)	IMPLAB	1 = Not at all 2 = Somewhat 3 = Very
13.3f. Child care	IMPCHLD	1 = Not at all 2 = Somewhat 3 = Very
13.3g. Financial aid advising	IMPFAADV	1 = Not at all 2 = Somewhat 3 = Very
13.3h. Computer lab	IMPCOMLB	1 = Not at all 2 = Somewhat 3 = Very
13.3i. Student organizations	IMPSTORG	1 = Not at all 2 = Somewhat 3 = Very
13.3j. Transfer credit assistance	IMPTRCRD	1 = Not at all 2 = Somewhat 3 = Very

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 13.3: How important are the following services to you at this college?		
13.3k. Services to students with disabilities	IMPDISAB	1 = Not at all 2 = Somewhat 3 = Very
Item 14: How likely is it that the following issues would cause you to withdraw from class or from this college?		
14a. Working full-time	WRKFULL	1 = Not likely 2 = Somewhat likely 3 = Likely 4 = Very likely
14b. Caring for dependents	CAREDEP	1 = Not likely 2 = Somewhat likely 3 = Likely 4 = Very likely
14c. Academically unprepared	ACADUNP	1 = Not likely 2 = Somewhat likely 3 = Likely 4 = Very likely
14d. Lack of finances	LACKFIN	1 = Not likely 2 = Somewhat likely 3 = Likely 4 = Very likely
14e. Transfer to a 4-year college or university	TRANSFER	1 = Not likely 2 = Somewhat likely 3 = Likely 4 = Very likely
Item 15		
15. How supportive are your friends of your attending this college?	FRNDSUPP	1 = Not very 2 = Somewhat 3 = Quite a bit 4 = Extremely
Item 16		
16. How supportive is your immediate family of your attending this college?	FAMSUPP	1 = Not very 2 = Somewhat 3 = Quite a bit 4 = Extremely

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 17: Indicate which of the following are your reasons/goals for attending this college.		
17a. Complete a certificate program	CERTPRGM	1 = Not a goal 2 = Secondary goal 3 = Primary goal
17b. Obtain an associate degree	ASSOCDEG	1 = Not a goal 2 = Secondary goal 3 = Primary goal
17c. Transfer to a 4-year college or university	TR4YR	1 = Not a goal 2 = Secondary goal 3 = Primary goal
17d. Obtain or update job-related skills	OBUPSKIL	1 = Not a goal 2 = Secondary goal 3 = Primary goal
17e. Self-improvement/personal enjoyment	SLFIMP	1 = Not a goal 2 = Secondary goal 3 = Primary goal
17f. Change careers	CARCHNG	1 = Not a goal 2 = Secondary goal 3 = Primary goal
Item 18: Indicate which of the following are sources you use to pay your tuition at this college.		
18a. My own income/savings	OWNINC	1 = Not a source 2 = Minor source 3 = Major source
18b. Parent or spouse/significant other's income/savings	PARSPINC	1 = Not a source 2 = Minor source 3 = Major source
18c. Employer contributions	EMPLOYER	1 = Not a source 2 = Minor source 3 = Major source
18d. Grants & scholarships	GRANTS	1 = Not a source 2 = Minor source 3 = Major source
18e. Student loans (bank, etc.)	STULOANS	1 = Not a source 2 = Minor source 3 = Major source

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 18: Indicate which of the following are sources you use to pay your tuition at this college.		
18f. Public assistance	PUBASSIT	1 = Not a source 2 = Minor source 3 = Major source
Item 19: Since high school, which of the following types of schools have you attended other than the one you are now attending?		
19. Proprietary (private) school or training program	PROPSCH	0 = No response 1 = Response
19. Public vocational-technical school	VOCTECH	0 = No response 1 = Response
19. Another community or technical college	COMMCOLL	0 = No response 1 = Response
19. 4-year college or university	FOURYEAR	0 = No response 1 = Response
19. None	NONESC	0 = No response 1 = Response
Item 20		
20. When do you plan to take classes at this college again?	TAKAGAIN	1 = I will accomplish my goal(s) during this term and will not be returning 2 = I have no current plan to return 3 = Within the next 12 months 4 = Uncertain
Item 21		
21. At this college, in what range is your overall college grade average?	GPA	1 = Pass/fail classes only 2 = Do not have a GPA at this school 3 = C- or lower 4 = C 5 = B- to C+ 6 = B 7 = A- to B+ 8 = A
Item 22		
22. When do you most frequently take classes at this college?	TIMCLASS	1 = Day classes (morning or afternoon) 2 = Evening classes 3 = Weekend classes

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 23		
23. How many total credit hours have you earned at this college, not counting the courses you are currently taking this term?	TOTCHRS	0 = None 1 = 1-14 credits 2 = 15-29 credits 3 = 30-44 credits 4 = 45-60 credits 5 = Over 60 credits
Item 24: At what other types of institutions are you taking classes this term?		
24. None	OTCLSNON	0 = No response 1 = Response
24. High school	OTCLSHS	0 = No response 1 = Response
24. Vocational/technical school	OTCLSVT	0 = No response 1 = Response
24. Another community or technical college	OTCLSCC	0 = No response 1 = Response
24. 4-year college/university	OTCLS4Y	0 = No response 1 = Response
24. Other	OTCLASS	0 = No response 1 = Response
Item 25		
25. How many classes are you presently taking at other institutions?	OTHINST	1 = None 2 = 1 class 3 = 2 classes 4 = 3 classes 5 = 4 classes or more
Item 26		
26. Would you recommend this college to a friend or family member?	RECOMMEN	1 = Yes 2 = No
Item 27		
27. How would you evaluate your entire educational experience at this college?	ENTIREXP	1 = Poor 2 = Fair 3 = Good 4 = Excellent
Item 28		
28. Do you have children who live with you?	HAVKID	1 = Yes 2 = No

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 29		
29. Mark your age group	AGENEW	2 = 18 to 19 3 = 20 to 21 4 = 22 to 24 5 = 25 to 29 6 = 30 to 39 7 = 40 to 49 8 = 50 to 64 9 = 65+
Item 30		
30. Your sex:	SEX	1 = Male 2 = Female
Item 31		
31. Are you married?	MARRY	1 = Yes 2 = No
Item 32		
32. Is English your native (first) language?	ENGFIRST	1 = Yes 2 = No
Item 33		
33. Are you an international student or foreign national?	INTERNAT	1 = Yes 2 = No
Item 34		
34. What is your racial identification?	RERACE	1 = American Indian or other Native American 2 = Asian, Asian American or Pacific Islander 3 = Native Hawaiian 4 = Black or African American, Non-Hispanic 5 = White, Non-Hispanic 6 = Hispanic, Latino, Spanish 7 = Other
Item 35		
35. What is the highest academic credential you have earned?	HIACCRED	1 = None 2 = High school diploma or GED 3 = Vocational/technical certificate 4 = Associate degree 5 = Bachelor's degree 6 = Master's/doctoral/professional degree

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
Item 36: What is the highest level of education obtained by your:		
36. Mother	MOTHED	1 = Not a high school graduate 2 = High school diploma or GED 3 = Some college, did not complete degree 4 = Associate degree 5 = Bachelor's degree 6 = Master's degree/1st professional 7 = Doctorate degree 8 = Unknown
36. Father	FATHED	1 = Not a high school graduate 2 = High school diploma or GED 3 = Some college, did not complete degree 4 = Associate degree 5 = Bachelor's degree 6 = Master's degree/1st professional 7 = Doctorate degree 8 = Unknown
Item 37		
37. Major code	MAJOR	If your college used the Center-provided *CCSSE* Program Code Sheet, please click here to view program codes.

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
The items below are the five *CCSSE* special-focus items on promising practices for 2013.		
1. During the current term at this college, I completed registration before the first class session(s).	COLLQ2623	1 = Yes; I was registered for ALL of my courses before the first class session(s) 2 = Mostly; I was registered for MOST of my courses before the first class session(s) 3 = Partly; I was registered for SOME of my courses before the first class session(s) 4 = No; I was NOT registered for ANY of my courses before the first class session(s)
2. The ONE response that best describes my experience with orientation when I first came to this college is:	COLLQ2624	1 = I took part in an online orientation prior to the beginning of classes 2 = I attended an on-campus orientation prior to the beginning of classes 3 = I enrolled in an orientation course as part of my course schedule during my first term at this college 4 = I was not aware of a college orientation 5 = I was unable to participate in orientation due to scheduling or other issues
3. During my first term at this college, I participated in a structured experience for new students (sometimes called a "freshman seminar" or "first-year experience").	COLLQ2628	1 = Yes, in my first term at this college 2 = Yes, in my first AND in at least one other term at this college 3 = Yes, but NOT in my first term at this college 4 = No, I did not
4. During my first term at this college, I enrolled in an organized "learning community" (two or more courses that a group of students take together).	COLLQ2629	1 = Yes, in my first term at this college 2 = Yes, in my first AND in at least one other term at this college 3 = Yes, but NOT in my first term at this college 4 = No, I did not
5. During my first term at this college, I enrolled in a student success course (such as a student development, extended orientation, student life skills, or college success course).	COLLQ2630	1 = Yes, in my first term at this college 2 = Yes, in my first AND in at least one other term at this college 3 = Yes, but NOT in my first term at this college 4 = No, I did not

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
The items below are course level data from the course master data file.		
Campus location	CAMPLOC	
Section number	SECNO	
Course number	COURSENO	
Course full name	COURNAME	
Building	BLDG	
Room	ROOM	
Class meeting days	MEETDAYS	
Instructor name	INSTRNAM	
Department	DEPART	
Actual enrollment	ACTENROL	
Class start time	STIME	
Class end time	ETIME	
Class start date	SDATE	
Class end date	EDATE	
Administration time group	TIMEGRP	1 = Morning (before noon) 2 = Afternoon (noon to 4:59 PM) 3 = Evening (5:00 PM or later)
The items below are course level data from the Student Report Information Sheet.		
Survey administered by	SRVADMN	1 = Faculty 2 = Survey Administrator
Faculty member's status	FACFTPT	1 = Full-time 2 = Part-time
Number of students in attendance	NUMSTU	
Total administration time (in minutes)	ADMNTIME	
Administration date	ADMNDATE	
How many students in this class have special needs?	SPNEEDS	
Number of credit hours taught this semester by faculty member teaching this class: Semester system hours	SEMHRS	
Number of credit hours taught this semester by faculty member teaching this class: Quarter system hours	QRTHRS	

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Community College Survey of Student Engagement (CCSSE)
2013 Main Codebook

Item	Variable	Responses
The items below are derived *CCSSE* variables.		
Taken or plan to take Developmental coursework / Have not taken and do not plan to take Developmental coursework	DEVELOPMENTAL	1 = Non-Developmental 2 = Developmental
Traditional/Nontraditional-Age students	STUD_AGE_CLASS	1 = Traditional-Age 2 = Nontraditional-Age
First-Generation/Not First-Generation Students	GENERATION	1 = First-Generation 2 = Not First-Generation
Credit hours completed	CREDIT	1 = 0 to 29 Credits 2 = 30+ Credits
Credential/Non-credential seeking	CREDENTIAL	1 = Non-credential Seeking 2 = Credential Seeking
The items below are the calculated weight and raw benchmarks.		
Institutional weight based on proportions of full-time and less than full-time enrollment in the primary sample	IWEIGHT	
Raw active and collaborative learning benchmark score	ACTCOLL	
Raw student effort benchmark score	STUEFF	
Raw academic challenge benchmark score	ACCHALL	
Raw student-faculty interaction benchmark score	STUFAC	
Raw support for learners benchmark score	SUPPORT	
The items below are standardized benchmarks (i.e. standardized across the cohort to have a mean of 50 and standard deviation of 25 at the respondent level).		
Standardized active and collaborative learning benchmark score	ACTCOLL_STD	
Standardized student effort benchmark score	STUEFF_STD	
Standardized academic challenge benchmark score	ACCHALL_STD	
Standardized student-faculty interaction benchmark score	STUFAC_STD	
Standardized support for learners benchmark score	SUPPORT_STD	

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APPENDIX C. INSTITUTIONAL ENTERING ORIENTATION STUDENT SURVEY (IEOSS)

Have you taken a career assessment to help you determine a major to pursue at college?

- NA
- No
- Yes

Is the major you plan to pursue at college one suggested from a career assessment tool or guidance counselor?

- NA
- No
- Yes

How did you learn about this college? (Check all that apply)

- Advertising received at my home
- College Catalog
- Admissions visit at High School
- Employee
- Website
- High School Counselor or Teacher
- Other (Please specify)
- Parents
- Relative

Which of the following BEST describes your reason for attending this college?

- No definite purpose in mind
- To complete Technical Program (a degree obtained in 2 years or less)
- To complete an Associate (2-year) Degree (a degree towards a 4-year degree, intended to transfer)
- To obtain or maintain a certification
- To take a few courses for self-improvement
- To take a few courses necessary to transfer to another college
- To take a few job-related courses

Marital Status (Check One)

- Married
- Separated
- Unmarried (Including Single, Divorced, and/or Widowed)

Do you have children/others who live with you and depend on you for their childcare/daycare?

- NA
- No
- Yes

Have you made adequate arrangements for reliable childcare/daycare while you are attending college?

NA
No
Yes

Have you established alternative secondary childcare/daycare arrangements should your primary childcare/daycare provider become unavailable?

NA
No
Yes

Do you feel you will have a strong support system of family, friends, and/or neighbors who can assist you during stressful times?

NA
No
Yes

Do you have reliable transportation to get you to and from college?

NA
No
Yes

Is English your native language?

NA
No
Yes

Are you an international student or nonresident alien?

NA
No
Yes

Which of the following types of classes do you MOST prefer to attend? (Check One)

Afternoon
Evening
Morning
On-line
Weekend
No preference

Which type of class format do you MOST prefer? (Check One)

Combination of lecture and lab
Lecture with separate lab
On-line/Web
Small-group
No preference

Will you have Internet access at the place you will be living while attending this college?

- NA
- No
- Yes

At this time, do you feel you may need assistance in any of the following areas to help you be more successful as you continue your education at this college?

- Developing better study skills and habits
- Expressing ideas in writing
- Identifying a major area of study
- Improve computer skills
- Improving math skills
- Improving public speaking skills
- Improving reading comprehension skills
- Improving test-taking skills
- Increasing reading speed
- Selecting an appropriate career

What do you feel are your greatest strengths as a student? (Select all that apply)

- Communicate with classmates
- Communicate with instructor and/or college staff
- Complete assignments in a timely manner
- Study habits
- Time management
- Willingness to communicate with instructor and/or college staff

What do you feel are your greatest barriers to being successful in college? (Select all that apply)

- Communicate with instructor and/or college staff
- Distractions of social life
- Family commitments
- Financial obligations
- Good emotional support system of family or friends
- Inadequate housing arrangements
- Job time commitment
- Need to improve math, reading or writing skills
- Not knowing if my selected major is right for me
- Reliable transportation
- Study habits
- Time management
- Willingness to communicate with my instructors

While in high school, did you earn college credit for one or more courses?

- NA
- No
- Yes

While in high school, did you take Advance Placement Courses? (AP-Courses)

NA
No
Yes

Did you take the Advanced Placement Exam?

NA
No
Yes

Have you attended another college or university?

NA
No
Yes

If you have attended another college or university, have you requested official transcripts be sent to this college?

NA
No
Yes

If you have previously attended another college or university, were you ever suspended from the institution?

NA
No
Yes

Have you completed the FAFSA financial aid forms?

NA
No
Yes

Do you need assistance with completing the FAFSA forms?

NA
No
Yes

What are the most effective means of communicating with you? (Please rank in order with #1 being first choice – do not number an item if you do not want to be contacted by that means)

Email
Facebook
Phone (Cell)
Phone (Land-line)
Text

Have you ever taken accelerated classes? (Select all that apply)
- 12-week
- 5-week
- 8-week
- No

Have you ever taken online (web) classes? (Select all that apply)
- NA
- No
- Yes

Where do you plan to live while attending Tyler Junior College?
- Apartment with roommates
- At home with parents or guardians
- Dorm
- In my home/apartment

How far will your commute to Tyler Junior College be from the place you will be living? (Check One)
- Less than 5 miles
- Less than 10 miles
- More than 10 miles
- More than 25 miles
- More than 50 miles

How many hours per week are you or do you plan to work during your first semester?
- 1 to 10 hours
- 11 to 15 hours
- 16 to 20 hours
- 21 to 25 hours
- 26 to 35 hours
- 36 hours or more
- Only occasional jobs
- I do not work or plan to work
- Undecided

What is the highest level of education achieved by your mother? (Check One)
- Elementary school
- Some high school
- High school graduate
- GED graduate
- Some college
- Two-year college degree
- Attended Vocational Technical
- Four-year college degree
- Some graduate school
- Graduate school
- Don’t know

What is the highest level of education achieved by your father? (Check One)

- Elementary school
- Some high school
- High school graduate
- GED graduate
- Some college
- Two-year college degree
- Attended Vocational Technical
- Four-year college degree
- Some graduate school
- Graduate school
- Don't know

What is the highest academic certificate or degree you have earned?

- High school diploma
- GED
- Vocational/Technical certificate
- Associate degree
- Bachelor's degree
- Master's/Doctoral/Professional degree
- None

APPENDIX D. INSTITUTIONAL REVIEW BOARD MEMORANDUM

From: Agnitsch, Kerry A [ORR]
To: Bryan Renfro; Renfro, Bryan D
Cc: Baber, Lorenzo D [SOE]; IRB Committee [ORR]
Subject: FW: Exempt Study Review Form_Bryan Renfro
Date: Friday, August 04, 2017 11:22:59 AM
Attachments: exempt-study-review-form_Renfro.docx

Hello Bryan,

As I understand it, your project involves analysis of existing data from various data sets held by Hawkeye Community College. The data from each set will be merged and all identifiers removed before it is provided to you. No unique identifiers will be included; nor will large amounts of demographic data that may allow for deducing of identities. Further, there are no ID codes for which you have access to a key that links the code to individual identities (I believe you indicated that in our phone conversation). In sum, you will have no information in the data that allows you to ascertain the identities of the students to whom the data pertain.

If my understanding is correct, then your project **does NOT require IRB oversight**. This is because your research does not include "human subjects", as they are federally defined – the data are existing, and thus are not collected through interaction/intervention with humans; and the data is not identifiable.

Please let me know if I have misunderstood anything, as that could change this assessment.

Thanks for contacting me about this—please let me know if you have any questions. It was nice speaking to you the other day – I hope your research goes well!

Kerry

Kerry Agnitsch, Ph.D.
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From: Bryan Renfro [mailto:bren@tjc.edu]
Sent: Wednesday, August 02, 2017 9:49 AM
To: Agnitsch, Kerry A [ORR] <kagnitsc@iastate.edu>
Subject: Exempt Study Review Form_Bryan Renfro

Ms. Agnitsch, per our discussion I have attached the exempt study review form. I appreciate your review and feedback. As we discussed it has been shared with several of my committee members although they have not signed yet. If you feel I need to get signatures and re-

submit just let me know. I appreciate your time this morning and your insight into my research regarding regulatory compliance.

If you need any additional information please feel free to contact me. Again, thanks for your assistance in this matter.

Bryan

Bryan Renfro
Dean
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